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Telephone ENGINEER and MANAGEMENT

AUGUST 1947

Featuring

TELEPHONE ENGINEER NEWSLETTER
Page 11

OBTAINING ADEQUATE CLEARANCE AT WIRE CROSSINGS
By John S. Reed

STROMBERG-CARLSON XY DIAL TELEPHONE SYSTEM
By Dr. H. R. Reed

PRACTICAL "HOW TO DO IT" SUGGESTIONS
Page 48

Editorial on Page 24

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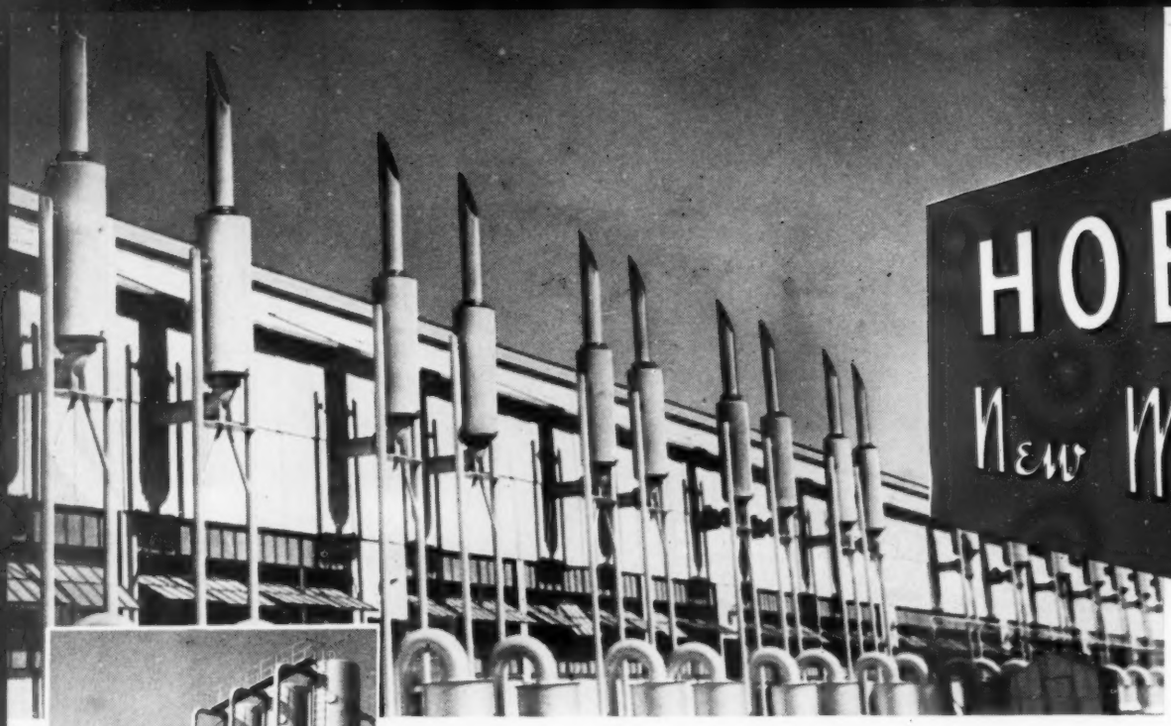
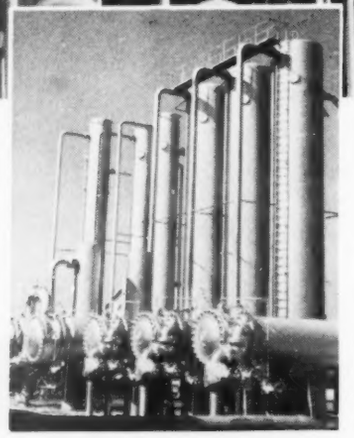
Cover Picture—
... of Farmer Mutual Telephone ... Glenwood, Iowa, are trained to ... switchboard work. In this ... girls are installing the mul... ... additional switchboard sec... ... they are added to present ...



HOBBS, New Mexico



The romance of cowboys and Indians is vanishing from Hobbs. The cowboys are becoming "drillers" and "roughnecks," and the Indians are being succeeded by farmers.

Formerly known for the authentic spirit of the old West which prevailed here, this entire area is now being transformed into a vital part of the great new Industrial West.

Here in the fabulous Permian Oil Basin lies the richest oil field yet discovered. Under today's controlled production, three future generations will live to see these wells still producing. Every day 50,000 barrels of oil are shipped out by rail. In addition to this many barrels are pumped out of here by pipe line. This huge quantity is produced by only 4.3 per cent of the land now under lease for oil and gas development.

The introduction of irrigated farming to this area has fostered an increase of over 700 per cent in cotton acreage. Success in this project will unloose a great potential, therefore, all eyes are turned to this important development.

Hobbs is served by the Southwestern Associated Telephone Company. And it is another of more than one thousand American cities and towns where all details of telephone directory publication are handled by General Telephone Directory Company.

In addition to our efforts toward increasing the gross advertising revenue from directory operations we strive to produce directories that are accurate and attractive; thereby assisting the Telephone Companies we serve in maintaining good relations with subscribers. We are proud of our record in all of the more than one thousand cities and towns we serve, and we believe that the Telephone Companies in these communities will agree that that pride is justified.

In the event you contemplate changes in your directory procedure we would be happy to discuss our complete directory publishing services with you. No obligation, of course.

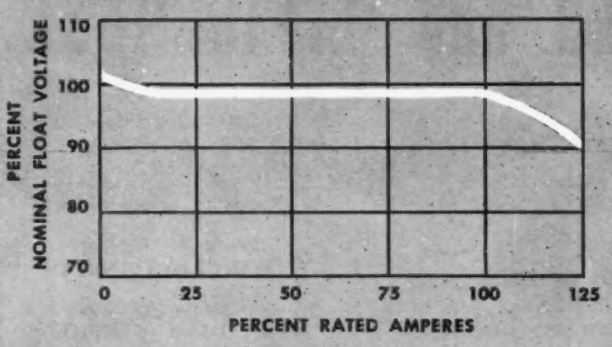
GENERAL TELEPHONE DIRECTORY COMPANY

EASTERN OFFICE: 185 NORTH WABASH AVENUE, CHICAGO 1, ILLINOIS, TELEPHONE STATE 5478

WESTERN OFFICE: PRESS-TELEGRAM BUILDING, LONG BEACH 12, CALIFORNIA, TELEPHONE 6-7221

BATTERY-CHARGER FUNDAMENTALS—

how constant voltage improves voice transmission



Typical Voltage Regulation Curve of the E. P. Diverter-Pole Motor-Generator

To assure satisfactory voice transmission, the Battery Charger must maintain the output voltage of the battery as close as possible to a constant value. Transmitters may become noisy if they are subjected to an excessively high voltage, and may have to be replaced because of permanent damage.

The E. P. Diverter-Pole Battery Charger maintains inherently constant d-c voltage . . . regardless of fluctuations in the a-c power supply. Delicate, separately-mounted regulating devices are not required. The E. P. Charger provides a safe, continuous floating charge to the battery. In addition, it is so designed electrically and mechanically that user after user has gone on record that it is exceptionally quiet in operation and creates no objectionable electrical noise.

why EP motor-generators are best . . .

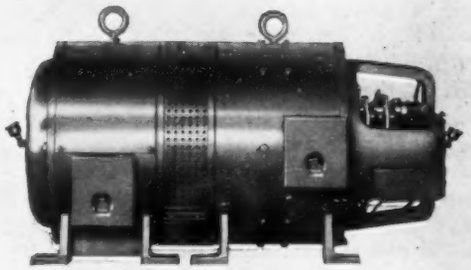
Since 1923, Diverter-Pole Motor-Generators have proved to be the most reliable, maintenance-free and efficient source of direct current for Telephone Exchanges. The characteristics of E. P. Diverter-Poles are ideal not only for the most satisfactory floating charge (a full floating charge is now the accepted standard), but also for carrying the major portion of the exchange load better than any other source of direct current.

The main reason for this superiority is that The Electric Products Company is a specialty manufacturer. For every exchange battery-charging application, E. P. designs and builds an individual Motor-Generator that fits exactly the requirements of the particular operation.

The result is Proved Performance as evidenced by the unequalled long-life records established by Diverter-Poles throughout the Telephone Industry.

For complete details . . .

ASK FOR BULLETIN 209



E. P. DIVERTER-POLE BATTERY CHARGERS

- **Are completely automatic**
- **Control exchange voltage well within high-low limits at all times**
- **Lengthen battery life**
- **Are self-protecting against dangerous overloads**
- **Will not "run away" or reverse polarity**

EP X-30

THE ELECTRIC PRODUCTS COMPANY

1729 CLARKSTONE ROAD CLEVELAND 12, OHIO

IT SEEMS TO US

"Joy out of life department"—W. L. (BILL) GOUDY of Union Carbon & Carbide's publicity department says he will be riding the "Pacemaker" the next time he visits Chicago. Just before leaving New York Bill found it necessary to put 4 new tires on his automobile . . . and just before embarking on the return trip the garage notified him that a new motor was necessary. $351.70.

• • •

BEWARE Trout, Bass, Bluegills, etc., S. E. (STEW) WRIGHT the Schauer Machine man is taking off the latter part of August with rod and reel and swears he will not return until he's had his fill of the finny tribe. If Stew can love fish as much as he enjoys lobsters he will have to catch a pretty fair mess.

• • •

J. I. KENNEDY and B. R. ANDERSON of the Northwestern Telephone Co., Freeport, Ill. were hosts to a very delightful party of their manufacturing friends on July 23 at the Freeport Country Club. Jack and Andy started us off with luncheon, then a golf tournament, a dinner and an evening of fun. Over 23 out of town guests attended. Even we won a prize!

• • •

Announcement has been received from JACK B. HALEY, executive secretary of the Texas Telephone Association, of the 1948 annual convention of that group to be held at Hotel Buccaneer, Galveston, Texas. The Texas telephone folks have been changing their convention locations to various sections of Texas during the past years and we think their choice of Galveston will be met with entire approval of the membership.

• • •

Recently we had a call from JIM KELLOGG, genial president of the Kellogg Switchboard & Supply Company, asking us to drop our quill and join with the Messrs. KELLOGG, PARSONS and EDSON as a foursome at golf. One of the pleasures of a man that dropped golf some years ago as a result of an incurable hook is to get out his rusty clubs and pray for a slice.

The National Telephone Magazine

VOL. 51 No. 8 — SINCE 1909

TELEPHONE ENGINEER and MANAGEMENT

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AUGUST, 1947

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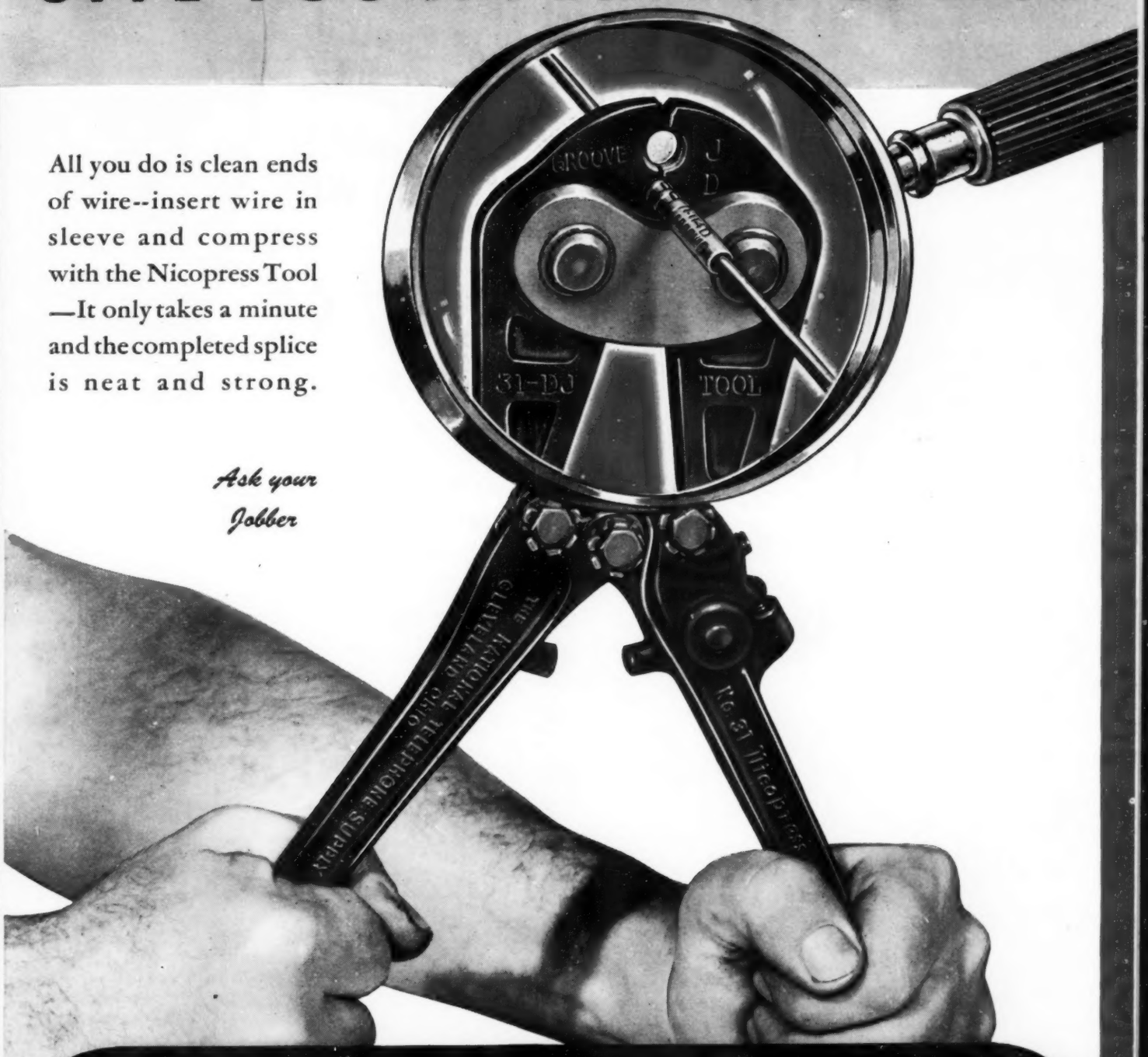
★

Published monthly by TELEPHONE ENGINEER Publishing Corporation
7720 Sheridan Road - Phone Rogers Park 3040 - Chicago 26, Illinois
West Coast Representatives, BRAND & BRAND
1052 West 6th Street, Los Angeles, California

Copyright 1947 by Telephone Engineer Publ. Corp.

VOLUME 51, NUMBER 8. Published monthly by Telephone Engineer Publishing Corporation. Office of Publication, Pontiac, Illinois. Executive and Editorial Office, 7720 Sheridan Road, Chicago, Illinois. Subscription: U. S., Cuba, Mexico, $2.00 per year; Canada $2.50, in all other countries, $4.00. Single copies, U.S.A. 20 cents; single copy JANUARY 15 BLUE BOOK BUYERS' GUIDE $1.50. Entered as second class matter at the post office at Pontiac, Illinois, under the act of March 3, 1879.

THE *Nicopress* SLEEVE AND THE NICOPRESS TOOL GIVE YOU A PERFECT SPLICE



All you do is clean ends of wire--insert wire in sleeve and compress with the Nicopress Tool —It only takes a minute and the completed splice is neat and strong.

Ask your Jobber

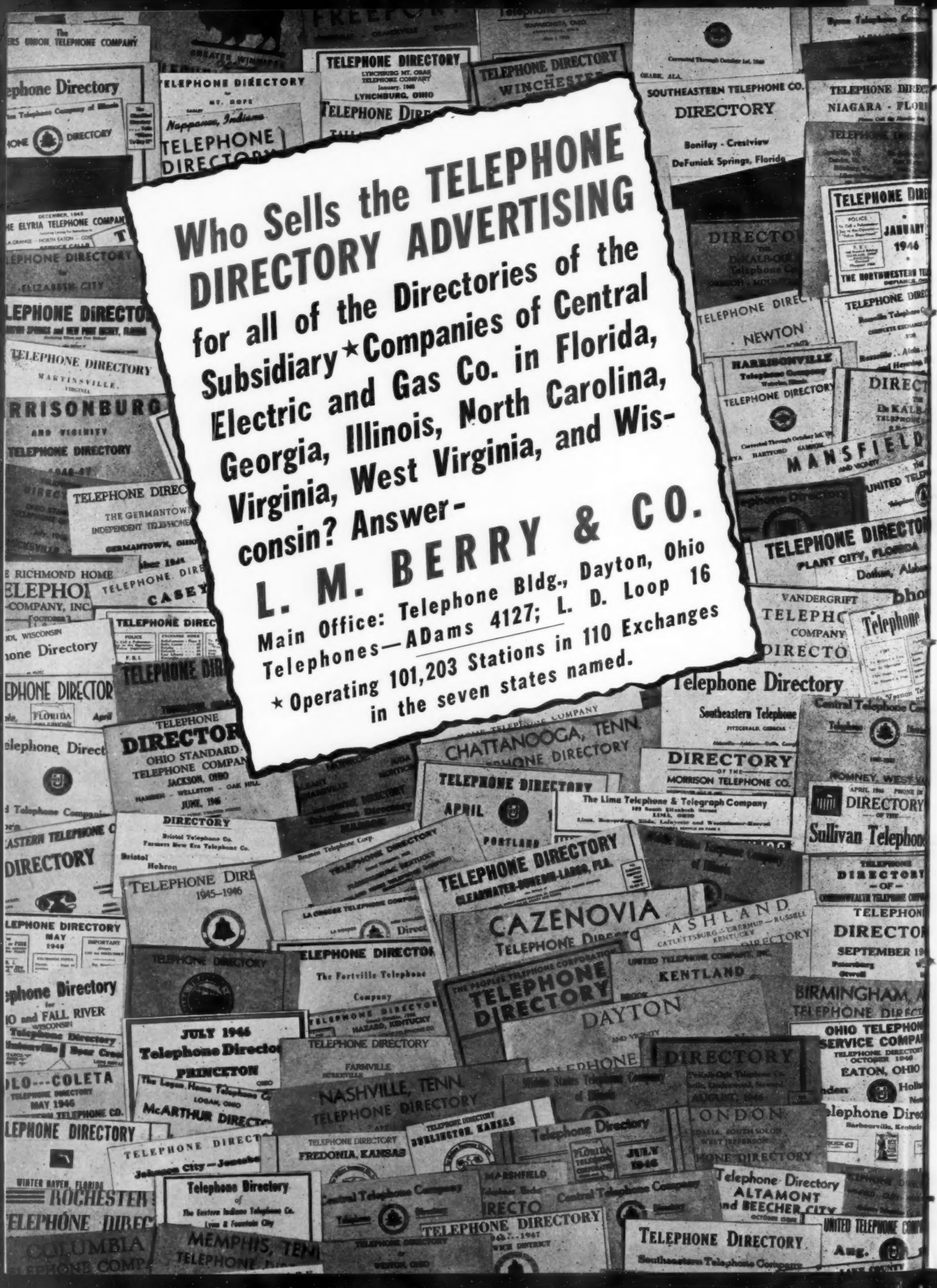
The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor—INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

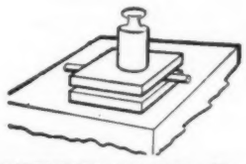
THE NATIONAL TELEPHONE SUPPLY COMPANY


Who Sells the TELEPHONE DIRECTORY ADVERTISING
for all of the Directories of the Subsidiary ★ Companies of Central Electric and Gas Co. in Florida, Georgia, Illinois, North Carolina, Virginia, West Virginia, and Wisconsin? Answer—
L. M. BERRY & CO.
Main Office: Telephone Bldg., Dayton, Ohio
Telephones—ADams 4127; L. D. Loop 16
★ Operating 101,203 Stations in 110 Exchanges in the seven states named.

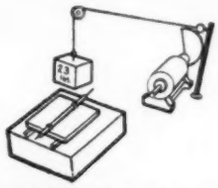
Tests show it...Field performance proves it

Drop wire lasts longer when protected with a jacket of DU PONT NEOPRENE

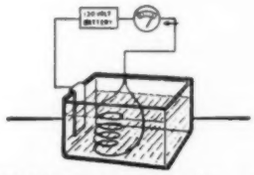
These tests show serviceability of telephone drop wire



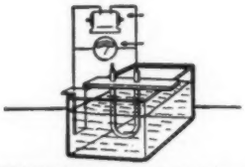
COMPRESSION TEST—Shows pressure necessary to cause failure, measures crush-resistance.



POUNDING TEST—25 blows per minute, 6½-inch drop, test ruggedness of material.

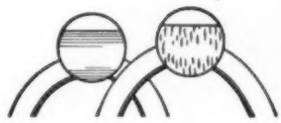


INSULATION TEST—120-volt battery and galvanometer measure leakage.

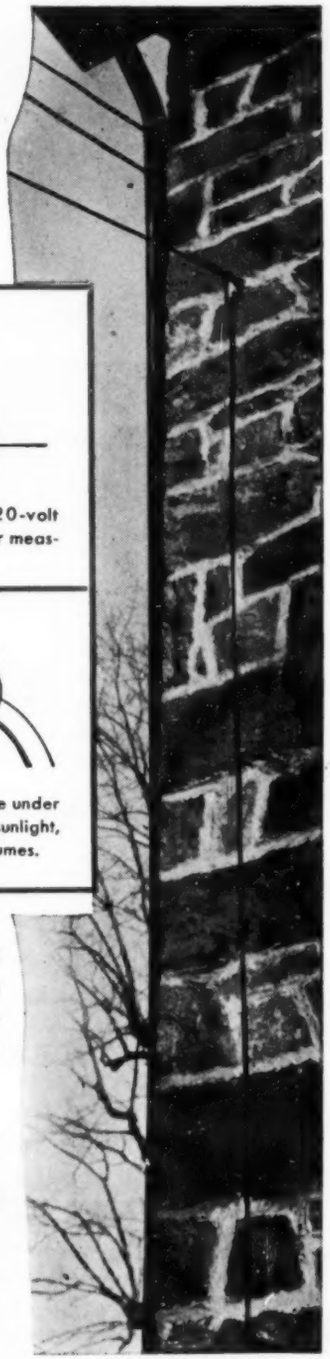


BREAKDOWN TEST—High-voltage generator and voltmeter check maximum voltage limit.

FLAME TEST—Underwriters' test shows the resistance to flame propagation.



WEATHER TEST—Exposure under strain reveals effect of sunlight, heat, cold and chemical fumes.



MANUFACTURERS of telephone drop wire didn't just happen to use Du Pont neoprene as jacket material. They ran many tests . . . convinced themselves that no other material satisfied *all* their needs so well as neoprene. And actual field installations are constant proof that they were right.

Throughout the year, neoprene protects the drop wire against damage from rain, snow, sunlight and heat. It resists abrasion, flame, and chemical fumes. So when you select drop wire—or any type of wire and cable—make sure it is jacketed with Du Pont neoprene. It's your assurance of longer service, better performance, and low maintenance costs.

• • •

For the latest information on neoprene, read **The Neoprene Notebook.** *It's full of interesting stories about neoprene's many uses in industry. Write for your free subscription today. E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Division L-9, Wilmington 98, Delaware.*

SPECIFY A JACKET OF

NEOPRENE

The rubber made by Du Pont

HERE'S WHY NEOPRENE DOES SO MANY JOBS SO WELL!

- ★ High tensile strength, resilience, low permanent distortion.
- ★ Tough and durable, resists abrasion and cutting.
- ★ Superior resistance to sunlight, aging, ozone, and heat.
- ★ Resistance to deterioration by oils, solvents, chemicals, acids.
- ★ Superior air-retention, low permeability to gases and fluids.
- ★ Special compositions are flame-retarding, static-conducting, flexible at low temperatures.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT
REG. U. S. PAT. OFF.

A CALENDAR TO

1947	SEPTEMBER					1947
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

September 15— TELEPHONE ENGINEER and MANAGEMENT'S Fall Construction and New Products issue

As usual this big issue will meet many present day problems on construction work. 12 feature articles . . . plus . . . several pages of New Products will make it of unusual value to telephone maintenance and repair men.

1947	OCTOBER					1947
SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

October 15—Convention Report issue of TELEPHONE ENGINEER and MANAGEMENT.

The complete "Convention-in-print" with many candid camera shots of those present will make good reading for the stay-at-homes . . . and serve as an excellent reference for those attending the affair.

1947	OCTOBER					1947
SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

October 1— Pre-Convention issue of FORTNIGHTLY TELEPHONE ENGINEER.

Bringing to you the official program and other information about the coming 50th Annual Convention of the USITA. This number will find a place in every telephone man's library as it will carry a beautiful review of the 50 years progress of USITA . . . plus . . . forecasts of the future by leaders of the industry.

January 15— Telephone Blue Book and BUYERS' GUIDE will be mailed as a part of January TELEPHONE ENGINEER & MANAGEMENT.

1948	JANUARY					1948
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

The only authentic, 3-way-cross-indexed directory published of the manufacturers and suppliers plus the products they serve to the telephone industry. A complete "Where-to-buy-it-directory" that you should keep on your desk for quick reference at all times.

Four excellent reasons why more telephone men subscribe to and read TELEPHONE ENGINEER Publications.

15 YEARS AGO THIS MONTH

A new voice was heard in the land of the Pharaohs

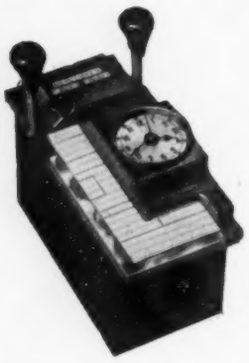
It was the voice of America . . . a voice from the new world speaking to a nation whose age is as old as history. On August 8, 1932, radiotelephone service was established between Egypt and the United States, and another page was added to the fascinating story of telephone progress.

The network of telephone communication was spreading fast. It is still spreading, reaching out not only to the far-away places, but also throughout America. For telephone progress never slows down. It moves steadily forward in keeping with the telephone tradition of faithfulness and dependability.

In Exide Batteries you will find the same dependability for which telephone service is famous throughout the world. Since 1895, Exide Batteries have been proving themselves worthy of that trust.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto



PRECISION timing of toll calls as done with Calculagraphs, is not only used for domestic telephone systems but is popular throughout the world.

Calculagraph uses the universal measurement of time—minutes and seconds—and requires no translation or conversion table to be used in any country.

Whether called minutos y horas, minuter och timmar, or just plain minutes and seconds, this data is printed accurately and dependably with Calculagraphs without computation at the end of a call.

CALCULAGRAPH COMPANY

310 SUSSEX STREET • HARRISON, NEW JERSEY

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

August 15, 1947

Dear Sir:

When House Ways & Means Committee resumes hearings November 18 on tax situation, it is expected that reduction of communications excises will head agenda; probably one of first bills to be dropped in House hopper in second session will be for revision of "hardship" excise tax rates.

One tax revision measure, proposed by Rep. Gearhart (R. Cal.), although not gaining backing of GOP leaders as yet, was made public July 28. This bill would reduce local telephone service tax from 15% to 3%; excise of 25% on long distance telephone service, telegrams, radiograms, cable facilities, leased wires to 5%; reduce from 8% to 2% tax on wire and equipment services. Rep. Gearhart's bill is aimed at $5½ billion tax cut, principally reducing income taxes; would raise excises on such things as gasoline, tea, coffee and tobacco.

* * *

Although new minimum wage legislation goes over to next Congressional session - probably beginning in January - don't get idea that issue is dead. A principal finding in recent report of President's Council of Economic Advisors is that to avoid recession purchasing power must be increased in lower wage levels, via minimum wage. Minimum recommended, 65c.

* * *

Bond between telephone & radio services grows stronger day by day. Last weeks of July, saw pickup in activity. In Michigan 20 isolated farmers received telephone service; messages hitch-hiked rides over 20 miles power lines, hopped off in Crystal Falls to Michigan Bell....Mobile Telephone service over highway network extending through N. W., Missouri & Eastern Kansas is in test stage; S. W. Bell has picked locations in six cities; plans FCC commercial request....Wisconsin Tel. Co. planning urban mobile telephone service in Lake Winnebago area.

* * *

Interest rates appear to be on their way up. Even insurance companies and other big institutional investors are beginning to look down their noses at bonds, no matter how high in quality, offered at low coupon rates, premium prices and consequent very low yield. Underwriters have had to shade prices on some recent big issues to get them taken up. U. S. Government may be paying more for money soon. Independent companies needing capital money should take note of present trend.

* * *

Communications Workers of America has announced that with work of signing new payroll deduction cards complete, three Indiana CWA Divisions have been recognized as collective bargaining agents for employees of Indiana Bell Co., with which they hold contracts.

Washington headquarters of union reported it was encountering no difficulties in gaining company recognition for transfer of former NFTW affiliates' due payments to new CWA Divisions.

Three Indiana Divisions receiving recognition from Indiana Bell are Numbers 1, 53, 56, representing plant, clerical, traffic workers. Plant Division (#1) also represents workers employed by the Indiana Associated Tel. Co. & Richmond Home Tel. Co.

* * *

Some telephone companies report some falling off in rate of applications for telephones. Question: Is saturation being reached in some places, or is falling off result of economic slowdown? Employment, country-wide, is at record high; nevertheless, there are signs of slower business. As one sign, mortality of small businesses is increasing.

* * *

Total appropriation of $6.2 million for 1948 fiscal year, less than the operating fund for fiscal year just ended and only $200,000 over House slash, was granted FCC in final Congressional action on Independent Offices appropriation bill. Both houses endorsed conference version reported out previous day after three earlier conferences had failed to produce agreement. Conference action was about what was expected, after Senate had raised House figure to $6.4 million, but nonetheless it is expected to restrict agency seriously in discharge of its responsibilities, since Commission's workload has been rising steadily in past two years.

* * *

Interesting booklet on "Depreciation Policy and the Postwar Price Level" is obtainable from Machinery and Allied Products Institute, 120 S. La Salle St., Chicago 3, for 25c. Shows that depreciation charges of American industry on assets acquired prewar should be increased by about one-half.

* * *

Highlights: Southwestern Associated Tel. Co., surveying Carlsbad, N. M. for possible automatic installation.....Knightstown (Ind.) Tel. Co. to issue $75,000, mortgage notes; plan automatic installation for Knightstown & Kennard....Rate increase granted International Tel. Co., International Falls, Minn.; company to install new equipment, provide 2 & 4-party service....Ken Gillette recently appointed telephone sales engineer for telephone products of Jas. R. Kearney Corp., St. Louis, Mo., will headquarters in Chicago....Walden (N.Y.) Tel. Co. plans change & reclassification of its capital stock, & issuance of mortgage bonds....First Stromberg-Carlson XY dial telephone system installed Worthington, Pa., Aug. 7....Recent Statistics of Independent Tel. Co's, issued by New York State Tel. Assoc'n report 294,825 Independent stations for New York state.

Ray Smith

Ray W. Smith, Editor

As Simple as

1. *Simplified Design = Less Maintenance*
2. *Rugged Design = Longer Life*
3. *Experienced Engineering = Dependable Performance*

But added together they =

Reliable "RU" CABLE TERMINAL

1. **Simplified Wiring and Servicing result from the RU's flat fanning plate, jumper guide rings, molded face plate, and beveled washers.**

2. **Aluminum Alloy chamber outlasts the cable! Zinc cover is ribbed for extra strength.**

3. **Engineered for a standard in outside plant construction, the Reliable RU Terminal gives many years of steady, dependable service. Its wide acceptance throughout the industry proves its quality.**

BUILD FOR THE FUTURE—
Specify Reliable!

Reliable

ELECTRIC COMPANY
3145 CARROLL AVENUE, CHICAGO 12, ILLINOIS

OVER 40 YEARS *Service* TO THE TELEPHONE INDUSTRY

greater reliability • low maintenance

and now **KELLOGG** *announces*

on 1000 *series*

No. 1000
with biased ringer
LESS DIAL

18.95

f.o.b. Chicago, Ill.

KELLOGG SWITCHBOARD AND SUPPLY CO.

ce . easy installation . long operation

New Lower Prices

MASTERPHONES

No. 1100
with biased ringer
LESS DIAL

18 65

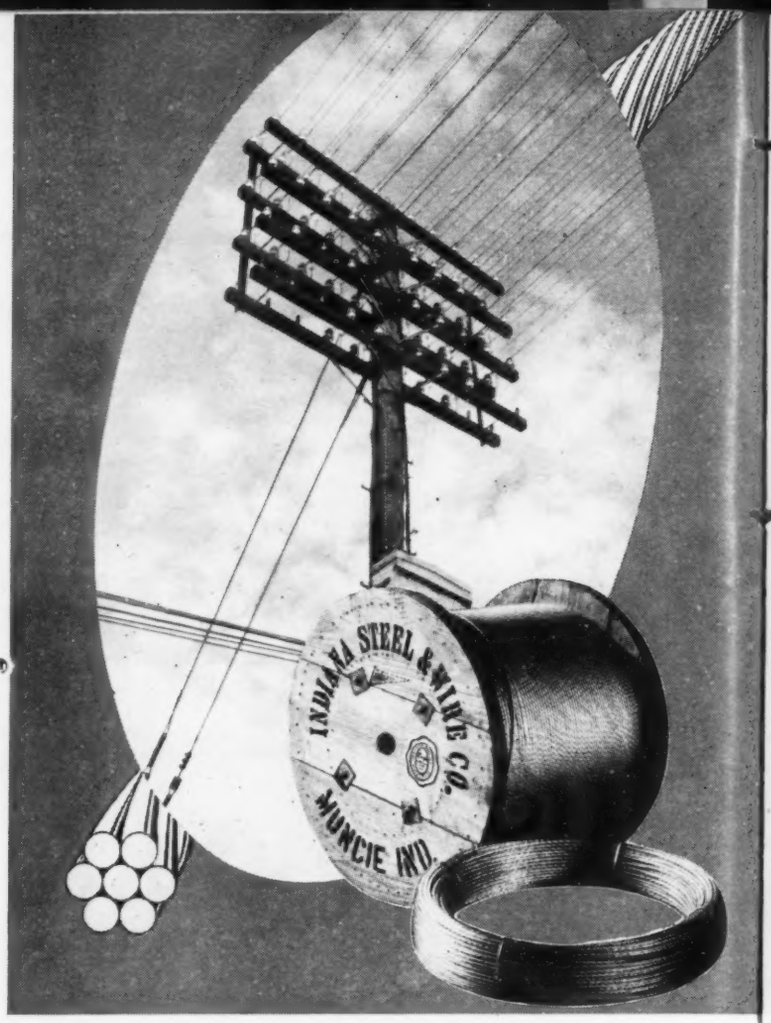
f.o.b. Chicago, Ill.

KELLOGG
1897 1947
Semi CENTENNIAL
Fifty Years
OF SERVICE AND PROGRESS
KELLOGG SWITCHBOARD AND SUPPLY COMPANY

6650 South Cicero Avenue, Chicago 38, Illinois

The Satisfaction Lasts When You Buy Products

Recommended and Guaranteed by KELLOGG



The Time-Tested Strand. Lasting protection against corrosion is provided in Indiana Crapo Steel Strand, thanks to its heavy, ductile, tightly-adherent coating of zinc, applied by the famous Crapo Galvanizing Process. This, plus rugged strength, are your assurance of long life and low maintenance. Use Crapo Steel Strand, made by INDIANA STEEL & WIRE COMPANY.

Dependable—in Any Weather! Hemingray Insulators defy rain, snow and sleet. They stand on guard through the hottest summer days and the coldest winter nights. Products of OWENS-ILLINOIS GLASS COMPANY, many of these famous insulators are still in service after 20, 30—and even 50 years. The insulator pictured above is Hemingray No. 9.

There's three-way satisfaction when you concentrate purchases of line supply and constuction materials at a single, responsible source: (1) The *quality* is right—all products are backed by the famous Kellogg DOUBLE GUARANTEE; (2) The service is right—orders are intelligently handled by experienced people; (3) *Delivery* is right—orders are shipped from the nearest of over 100 strategically located distribution points.

KELLOGG SWITCHBOARD & SUPPLY COMPANY

Branch Offices: Kansas City, San Francisco, St. Paul, Los Angeles

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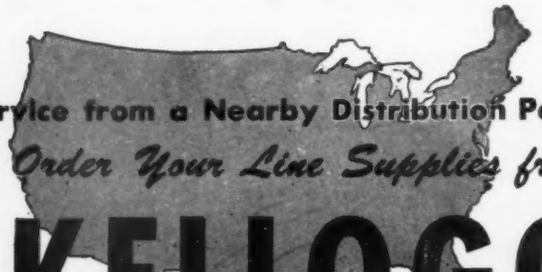
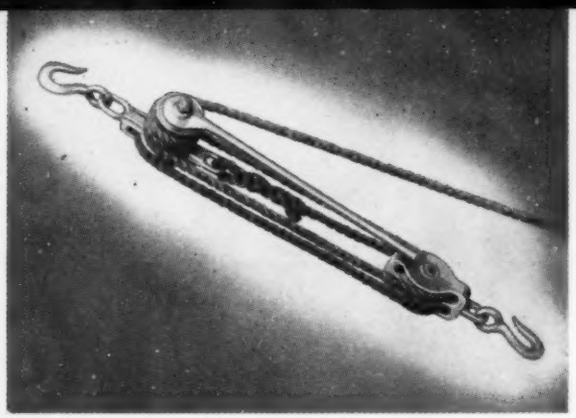


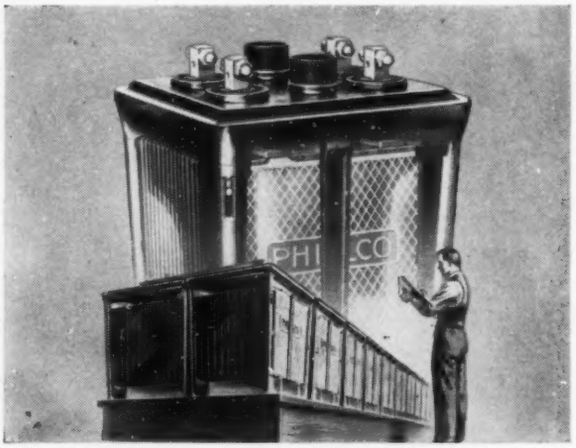
For Service from a Nearby Distribution Point

Order Your Line Supplies from

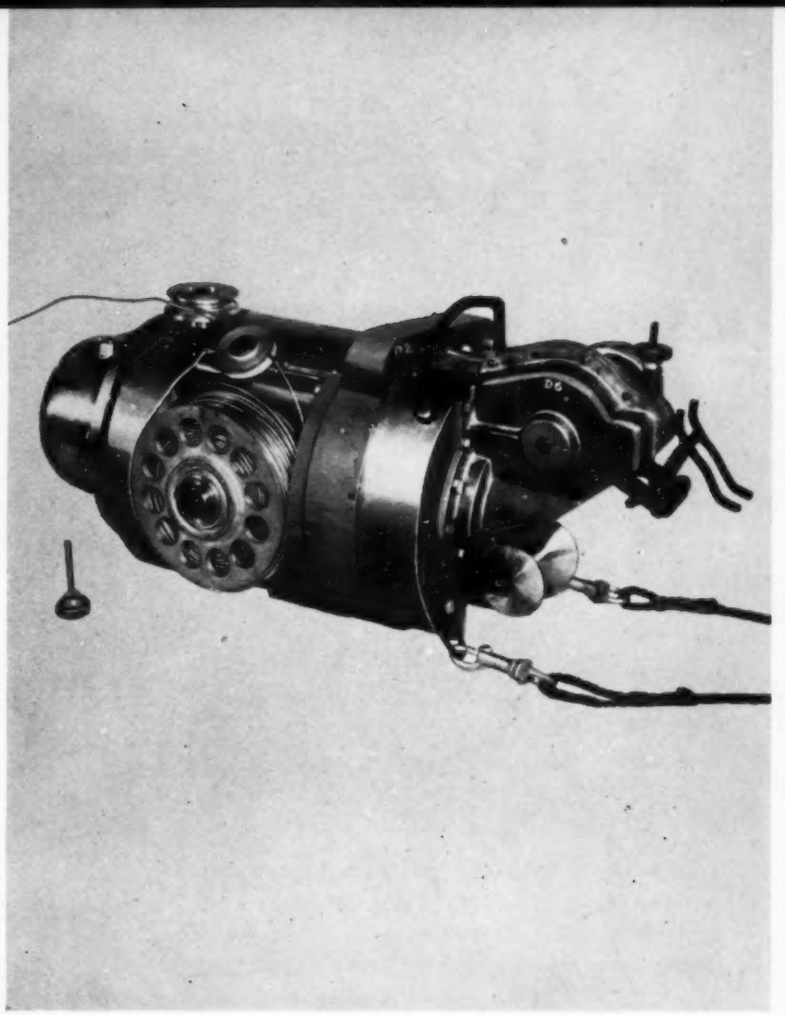
KELLOGG



A "Must" For Every Line Crew. Chance Pulley Blocks were especially made for line construction and maintenance work. Light weight for easy handling. Operate with a ratchet action, having a leverage ratio of 32 to 1. Made by A. B. CHANCE CO. in 4 sizes, capacities from 2000 to 5000 lbs.



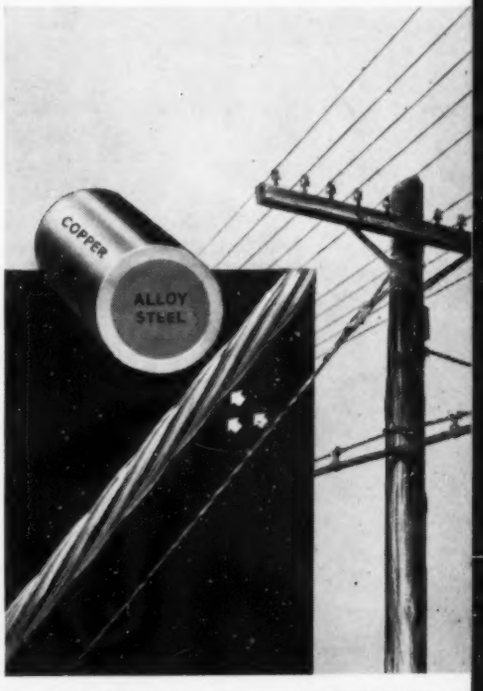
For the Special Needs of the Telephone Industry, Philco offers a complete line of storage batteries ranging in capacities from 10 A.H., to 1680 A.H. All incorporate the famous PHILCO Floté element, that eliminates low cells in full float service. Specify Philco in Steel Glass, Rubber or Vitrabloc.



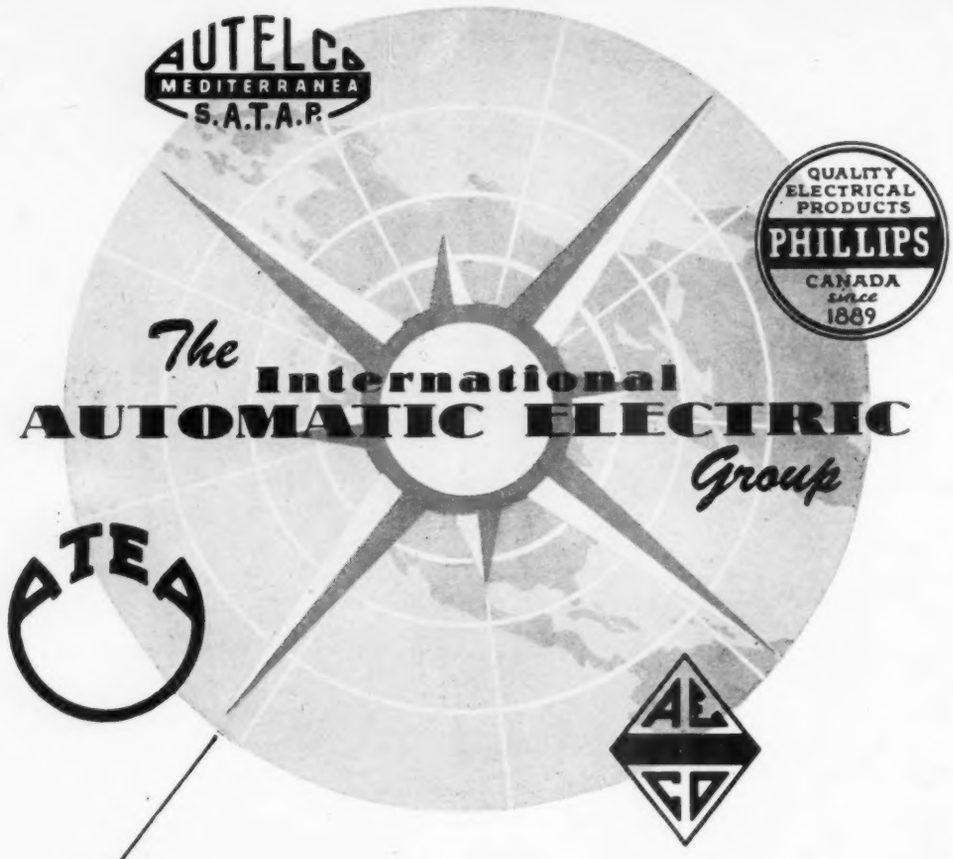
Lower Costs on New Construction. The model "D" Neale Cable Spinner operates smoothly under all conditions. This CABLE SPINNING EQUIPMENT CO. product has a double-drive mechanism which insures evenly spaced spiral spun under steady tension. Ratchet locks in place on strand when pull on low line is released. Detachable ring pusher moves temporary rings ahead of spinner.

No More High Resistance Joints and intermittent open-and-closed circuits, when you use KESTER SOLDER CO.'s Rosin Core Solder! It seals joints permanently, protects against service troubles. Used by Kellogg and other manufacturers of communication equipment.

Long Life Expectancy is built into pressure-treated Southern Pine Poles and Crossarms. Carefully and thoroughly treated by AMERICAN CREOSOTE WORKS, INC., these poles give dependable service under toughest climatic conditions. For longer lasting poles specify "Pressure-Treated Southern Pine."



Strength Plus Life. Choose COPPERWELD Guy and Messenger Strand for the ideal combination of high breaking strength plus long life. Each wire has a thick protective covering of copper *permanently* molten-welded to a core of high-strength alloy steel.



Pattern For World-Wide Service

The union of four quality companies under the banner of International AUTOMATIC ELECTRIC Corporation, weaves a pattern of worldwide service that is second to none. From this well-knit organization come products of finest quality—telephone exchange equipment, telephone instruments, and telephone wires and cables that are in demand throughout the world. Through the association of these manufacturing companies, the International AUTOMATIC ELECTRIC Group is equipped to supply these products to telephone men anywhere.

We are affiliated, in our Group, with telephone companies operating in seventeen states in the United States, also in Canada and elsewhere. The International AUTOMATIC ELECTRIC Group thus has available the experience of these operating companies, and offers the necessary technical skill and operating experience for the engineering and installation of telephone plants of any size in any part of the world, and is prepared to finance such plants if and as desired by any customer.

We should be glad to adapt our service to your specific needs. Simply tell us how we can serve you.

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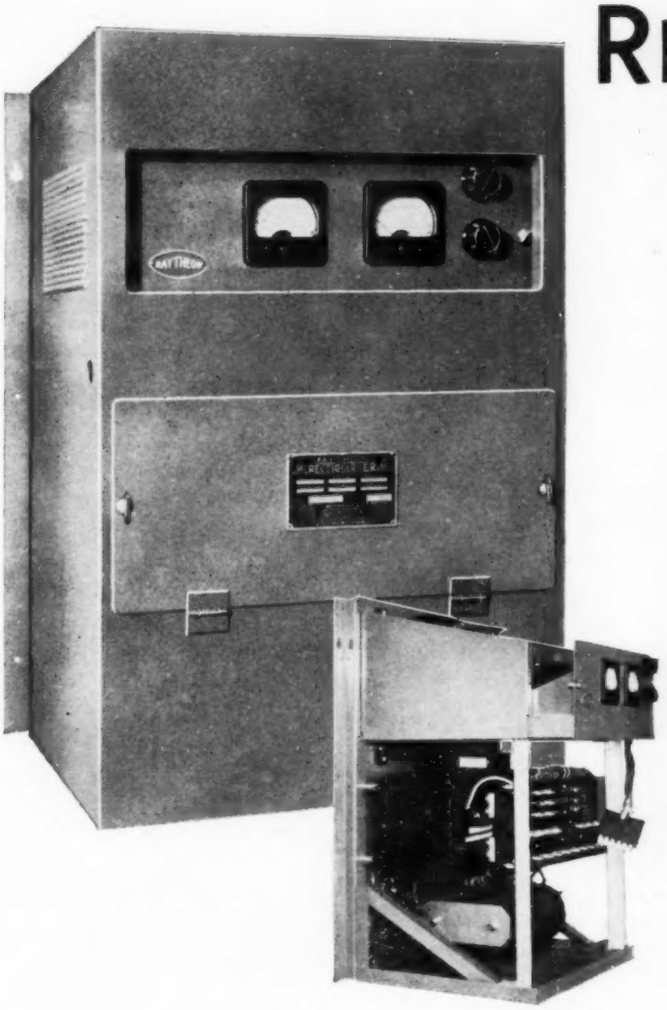
Selling Companies and Agents Throughout the World

Announcing — A NEW HIGH-POWERED *Electronic* RECTICHARGER



Every part of the new electronic Recti-Charger is readily accessible. Note view with cover removed and drawer pulled out for inspection.

FOR EXCHANGES REQUIRING GREATER CAPACITY than has heretofore been available in the well-known Raytheon Recti-Charger line, this new electronic model is now available in capacities up to 24 amp. at 24 volts, or 12 amp. at 48 volts.

Use of an electronic amplifier in conjunction with a saturable core reactor keeps the new unit small and compact. Greater flexibility of adjustment is provided, along with greater frequency range, a variety of input and output voltage combinations, and closer tolerance of regulation. By means of a new feature for limiting output current, the unit is self-protecting.

As in the case of standard RectiChargers, the new high capacity electronic model is equipped with long-life dry plate rectifiers, sturdy magnetic components, a well-ventilated, attractive case... and has no moving parts to wear or get out of adjustment.

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Excellence in Electronics

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COMMERCIAL PRODUCTS DIVISION

WALTHAM 54, MASSACHUSETTS

Industrial and Commercial Electronic Equipment, Broadcast Equipment, Tubes and Accessories

Sales Offices: Atlanta, Boston, Chicago, Cleveland, Louisville, New York

telephone and telegraph equipment costing over 12 million dollars

A large inventory of surplus communication equipment located at the U. S. Army General Depot, Ogden, Utah, is now to be sold at bargain prices. Some 135,000 miles of unused W110-B Army Field Wire, costing approximately ten million dollars, is offered on half-mile and mile reels. Available also are: communication cable, switchboards, telephones, head and chest sets, coils and many other miscellaneous items. Some of it used, some of it unused—*all* of this equipment was built to rigid government inspection and has proved its high quality and dependability.

WAA offers this government owned surplus at fixed prices concurrently to priority claimants and commercial buyers. Twenty per cent (20%) is reserved to fill Federal Agencies' orders which are received by Sept. 8, 1947. All other orders received by this date will be filled in the following sequence: (1) Veterans of World War II, (2) Federal Works Agency (buying under Public Law 697), (3) Subsequent priority groups, and (4) Commercial purchasers.

Veterans of World War II should apply at their nearest WAA Certifying Office for certifications. The Veteran's "offer-to-purchase" must contain the date, case number, and the location of the Certifying Office.

This equipment is completely catalogued in Listing SU-97-159, dated August 18, 1947. Write, phone or visit any WAA Customer Service Center for *your* copy. It explains in detail the location and condition of this equipment, how to inspect it, and the Standard Terms and Conditions of Sale. This listing also contains official forms which may be used for the submission of orders. Orders should be sent to your nearest Customer Service Center. Their addresses are shown in this listing.

In addition, this catalogue lists approximately $650,000.00 worth of telephone and telegraph equipment, previously offered at fixed prices to priority claimants. This material is offered on sealed bid basis to *all* levels of trade. Bids should be sent to Customer Service Center, WAA, 1710 S. Redwood Rd., Salt Lake City, Utah.

All Sales are subject to WAA's Standard Terms and Conditions of Sale. The right is reserved, of course, to reject any or all orders or bids.

Remember

Get your copy of Listing SU-97-159 first!

OFFICE OF AIRCRAFT AND ELECTRONICS DISPOSAL

WAR ASSETS ADMINISTRATION

GOVERNMENT WAA SURPLUS

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago Cincinnati • Cleveland • Denver • Detroit • Grand Prairie, Tex. • Helena • Houston Jacksonville • Kansas City, Mo. • Little Rock, Ark. • Los Angeles • Louisville • Minneapolis Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond Salt Lake City • St. Louis • San Antonio • San Francisco • Seattle • Spokane • Tulsa

1318

For Better and Faster Jobs

Speed up your work schedules—do a better job at less cost—with Barco Portable Gasoline Hammers. Each of these powerful, self-contained tools multiplies the work of one man, saves money every hour it's on the job. In hard-to-reach spots and in rough terrain, Barco hits hard and fast. Eleven special attachments—all instantly interchangeable. Write for complete information.

BREAKING • DRILLING • DRIVING • TAMPING

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PORTABLE GASOLINE HAMMERS

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

BARCO MANUFACTURING COMPANY, NOT INC.
1809 WINNEMAC AVENUE, CHICAGO 40, ILLINOIS
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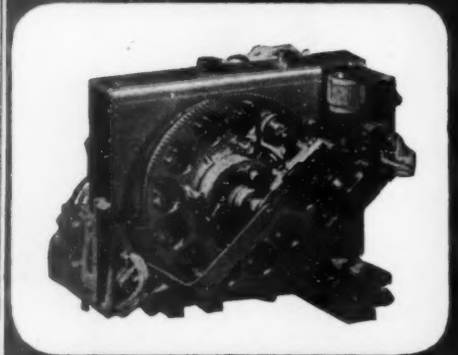
LINK THE WORLD'S



THE IMPULSE REGENERATOR

- *has been developed because—*
  - (*a*) *the speed of the dial on a subscriber's telephone may vary between* 8 *and* 12 *impulses per second and the "break" period may be between* 63% *and* 70% *of the impulse.*
  - (*b*) *the line to line insulation of a subscriber's line may be as low as* 50,000 *ohms and its loop resistance* 750 *ohms.*
  - (*c*) *in result, the impulses become distorted before operating a selecting mechanism.*
- *has therefore been designed to receive impulses before they become too distorted and re-transmit them at the correct speed and ratio within narrow limits.*
- *has the facility of catering for any number of impulse repetitions; the loop and leak resistances in each stage can be of any value up to* 2,000 *ohms or as low as* 50,000 *ohms respectively.*

A7103-A2-L

'S RESOURCES . . .

in the Health Resorts

Not least of nature's contributions to the well-being of mankind are the health resorts where the tonic air of mountains or the curative properties of mineral springs help to ease bodily ills and relieve nervous strain. The location of natural amenities is governed by geographical and climatic factors. In result, communities which arise there are separated, in fact are often remote from, normal commercial or residential towns. This gap must be bridged by telecommunications for contact must be maintained with business and family life. Connections must frequently be established over some distance often through a series of intervening exchanges. Strowger Automatic Telephone equipment is available in a form particularly appropriate to this need. The Strowger Impulse Regenerator enables automatic switching to be effected throughout multi-exchange areas for it receives and stores trains of dial-impulses, many of which may be distorted, and then transmits equivalent trains of perfect impulses. Problems arising from impulse repetition are solved and dialling can be effected through any number of exchanges in tandem.

with

STROWGER

TELECOMMUNICATIONS

AUTOMATIC TELEPHONE & ELECTRIC CO. LTD.
NORFOLK HOUSE, NORFOLK STREET, LONDON, W.C.2

STROWGER WORKS (ATM) *LIVERPOOL, ENGLAND*

EDITORIAL

Enlightened Regulation

WHEN YOU read some of the proceedings of the annual convention of the National Association of Railroad And Utility Commissioners, held in Boston July 14-17, you get the feeling that at last the regulation of public utilities in this country is coming to be what it was intended to be all the time.

Possibly there are still some commissions, or commissioners, of the old school, who still believe that the principal mission of a regulatory commission is to hold utility rates and charges down, regardless of circumstances.

It is certain, however, that Hon. Harry M. Miller, Chairman of the Ohio Public Utilities Commission, is not of that school. In one of the principal addresses before the convention Mr. Miller said, in part, regarding telephone rates:

> "I know of no means by which a telephone business can exist that is different from that by which any other business exists. . . . The determination of what such earnings must be is a very practical problem in economics requiring business judgment of the highest order and cannot be ascertained on the basis of any legalistic formula. Today our Commissions are free from such formulae but we are bound in good conscience and by practical economics to fix rates which will provide a return adequate to attract capital at the time it is needed, to maintain the credit of the business, and thus to give assurance of the continuity and quality of the service. . . .
>
> "From my observations the temper of the people today is such that if it were a matter of alternatives they would overwhelmingly prefer good service at good and fair rates to poor service at low rates."

That, to our way of thinking, is not only common sense of the highest order, but it is also a spendid recognition by an utility commissioner of the high purpose for which the regulation of public utilites was created by law-makers years ago.

Retiring president of NARUC, Hon. Duane T. Swanson of Nebraska, also gave recognition to the telephone rate situation when he said:

> "With respect to communications, the lion's share of attention will go to Bell System rate cases. In many states, too, the Independent telephone companies will be demanding that attention be given to their revenue needs. The Independents, too, will need and should receive help and assistance from regulatory officials in accounting matters, financing, engineering and service."

Telephone companies can take heart in these troubled times, when outstanding utility commissioners think and talk like that. They can feel that politics is taking a back seat in regulation, and that they will likely receive sympathetic consideration of their revenue problems, based on the merits of their case rather than upon apprehension on the part of the commission and its staff over what the public will say or do about a rate increase.

As Mr. Miller very correctly said, the fact is that the public overwhelmingly prefers good service at good and fair rates to poor service at low rates.

Today, as never before, the public has realization of the need for higher telephone rates. It is much more likely to blame a telephone company that attempts to get by with poor service because it lacks the courage to ask for higher rates, and to blame the commission for lacking the courage to approve justifiably higher rates, than it is to criticise the higher rates.

When regulation deals fairly upon the basis of the economics of the situation, rather than unfairly to the utility on the basis of the politics of the situation, it becomes a highly constructive element which can do more than any other factor to guarantee the pubic good utility plants and service. Under that kind of regulaton the utilities can finance, expand, improve, and provide a quality of service fully justifying this kind of regulation.

GOT A CONSTRUCTION BACKLOG?

SPEED-UP WITH FWD TRUCKS

Most utilities face construction "backlogs"... and are concerned about the job of catching up on construction and deferred maintenance, system expansion, modernization programs and other steps to meet increased demands for utility services.

FWD four-wheel-drive trucks are built to help you "speed up" safely, profitably. You can depend upon these utility-engineered trucks for the most rugged heavy-duty service, anywhere, on or off the highways. FWDs rate as America's No. 1 heavy-duty line trucks, according to a recent independent survey on utility perference for trucks. FWDs have an outstanding performance record among utilities. Over 200 utilities operate fleets, some having purchased 200 or more.

For complete information see GraybaR, or write —

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

Distributed by GraybaR

America's Foremost FWD ***Heavy-Duty Truck***

Focused in the eye of the telephone industry is the new No. 1243 Desk Set . . . one of the complete line of Stromberg-Carlson telephones that are as far advanced in performance and durability as they are in modern styling.

TELEPHONES, SWITCHBOARDS AND INTERCOMMUNICATION SYSTEMS • SOUND EQUIPMENT AND INDU

YE ON STROMBERG-CARLSON

Stromberg-Carlson has never been content to merely do the obvious. That's why operating companies, faced with long-range programs of expansion and modernization, are keeping their eye on Stromberg-Carlson research and development for new and more profitable ways to give better subscriber service.

Whether your needs are big or little . . . ordinary or extraordinary . . . immediate or future . . . it will pay you to consult Stromberg-Carlson *first.*

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AND INDUSTRIAL SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

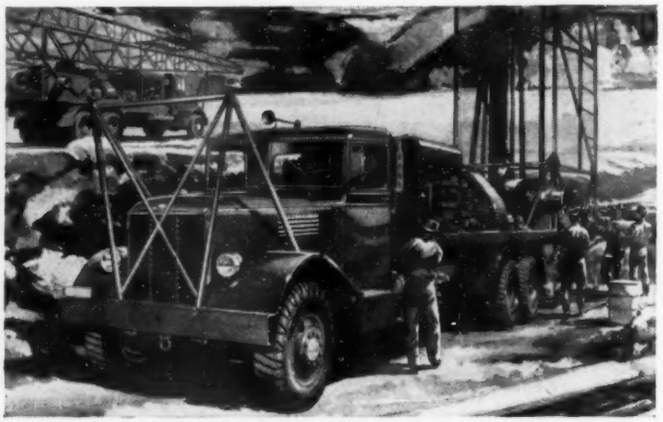
STROMBERG Telephone CARLSON

40 Years with
INTERNATIONAL

International Harvester started in the truck business in January 1907 when it introduced the Auto Wagon.

In 1923, Harvester transferred its heavy-duty truck production from Akron, Ohio, to a new plant at Fort Wayne, Indiana. The unit above was produced in 1927.

Late in 1940, a complete new line of International Trucks was introduced. This line, known as the "K" Line, ranged from half-ton pickup to giant six-wheel units.



Early in 1946, International Harvester announced the establishment of a new plant at Emeryville, California, for the production of giant highway and off-highway vehicles. These range from 30,000 to 90,000 pounds gross weight rating.

40th
ANNIVERSARY OF
INTERNATIONAL TRUCKS
1907-1947—Forty years of International Truck Service to Industry, Commerce and Agriculture.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue — Chicago 1, Illinois

In January 1947, International Harvester celebrated its 40th truck anniversary and introduced its brilliant new KB Line—15 basic models with gross weight ratings from 4,400 to 35,000 pounds.

Tune in James Melton on "Harvest of Stars" Sunday! NBC Network.

INTERNATIONAL

INTERNATIONAL Trucks

NEWS BRIEFS

Mobile Service For Emporia, Kansas

Mobile telephone service will be put in operation by the Southwestern Bell Telephone Co. in Emporia, Kansas, and a highway network extending over eastern Kansas and northwest Missouri late this summer.

The mobile telephone service will be first initiated in Emporia on an experimental basis. Rates for the necessary vehicle installations and tolls have not been announced.

Six 250-watt transmitters are to be installed soon, one each at Topeka, Wichita, Salina, Emporia, Kansas City and St. Joseph, Mo., and 30 receivers will also be spotted through the area.

◆

Southern Continental Makes Personnel Changes

The Southern Continental Telephone Co. has announced that E. L. Woodell has been transfered to Glasgow, Ky., to become manager for the Glasgow district serving the towns of Glasgow, Adairville, Auburn, Cave City, Hardyville, Hiseville, Horse Cave, Lewisburg, Munfordville, Oakland, Scottsville, Smiths Grove and Tompkinsville.

He succeeds R. A. Maybury who has been promoted and transferred to headquarters at Cookeville, Tennessee, as plant superintendent.

◆

First Award Under New Jersey Anti-Strike Law

In the first ruling by an arbitration committee under the new Public Utility Anti-Strike Law in New Jersey, 4,700 maintenance workers of the New Jersey Bell Telephone Co. on July 22 were awarded a general wage increase of $4.50 and an additional 77 cents in fringe benefits weekly.

The increase was 50 cents higher than the wage increase amount agreed upon in negotiations between the company and traffic employees during the strike of the National Federation of Telephone Workers. The maintenance workers had not gone on strike and had put the question of their wages up to arbitration. They had, however, refused to cross picket lines during the traffic walkout.

The award was made by a committee made up of Nathan L. Jacobs, Dr. Robert C. Clothier and Dr. Henry J. Meyer, the latter the former Vice-Chairman of the National Telephone Commission.

◆

Wisconsin Act Outlaws Strikes In Public Utilities

A bill outlawing strikes in public utility companies, including telephone, became law in Wisconsin July 23 when it was signed by acting Gov. Oscar Rennebohm. Under the act, a new system of conciliation and compulsory arbitration will be set up by the state to settle utilities labor disputes. Under the law, strikers against utility companies can be fined up to $250 or sent to jail for as long as a year.

The law provides that the Wisconsin Employment Relations Board will name a panel of labor relations experts to serve as conciliators and arbitrators in utility disputes. If an agreement cannot be reached the Board will direct one of its conciliators to try to reach a settlement and if he fails to produce an agreement within 15 days the Board will then name three or five arbitrators. The latter would then conduct a hearing and a final decision would be rendered. Arbitrators would have a maximum of 60 days to reach a decision. In the event either labor or management believed the arbitrators' award to be unreasonable they could appeal to a circuit court for review of the decision.

◆

Associated Company Completes Santa Monica Building

To provide space for additional central office equipment and administrative and engineering offices, an upward expansion of 2½ stories on the original three-story general office building of Associated Telephone Company, Ltd. in Santa Monica recently has been completed. Conforming to the existing architectural style, the addition is of class A steel and concrete construction, fire and earthquake resistant, and adds approximately 25,000 square feet of floor space.

The lower floor of the building has been rearranged to provide space for an expansion of district commercial functions, and the majority of offices which occupied the third floor have been relocated to upper floors to provide space for a conference room and expansion of dial automatic equipment.

One of the first units in the Associated Company's vast postwar expansion program to reach completion, the building provides the maximum in comfort and healthfulness for its occupants, with well-ventilated offices and the modern lighting facilities.

WHAT THEY'RE SAYING...

Editorial,

Chicago Journal of Commerce

"Despite the steadily improved service, now to be stepped up another notch or two by large expenditures, it is still possible to find subscribers who complain about telephone rates. Utility services in this country are, by and large, the cheapest commodity the general public can buy today. Yet whenever a public utility seeks a rate increase necessitated by increased costs, some irate groups invariably let out a wail of anguish.

"Thousands of Chicagoans never hesitate to pay $5 for a 75-cent night club steak, but let the light, gas or telephone people ask for a few cents a month more from each subscriber and someone is sure to call upon the congressional committee on un-American activities for help."

★ *TELEPHONE ENGINEER and MANAGEMENT'S*

Washington BUREAU REPORTS

by
ROLAND C. DAVIES
and
FRED HENCK

Congressional Balance Sheet

WITH ADJOURNMENT for "fence building" and laying of groundwork for the presidential election, the Congressional balance sheet takes on an anticipatory aspect rather than providing a study in the light of actual accomplishments in the past session. And where future action of Congress is concerned, it appears that the only concrete measures affecting the communications industry specifically will come in the tax field, particularly excises where it can certainly be expected that the national legislators will cut to some extent the wartime levies on local and long distance telephone services as well as those applied to telegraph and international communications fields.

Without specific application to, but directly affecting, the Independent telephone industry and the Bell System, other leading measures to be taken up when our national legislators return to Washington after the summer hiatus will be labor legislation, minimum wage and reorganization of the FCC.

It is apparent that the Taft-Hartley Act will undergo some major revisions. Congressmen are now back in their home districts and, for the first time since the Republican landslide of last year, will have direct access—and be accessible—to the tenor of feeling of their constituents on major national issues, including the highly important labor question. It is felt in Washington that the next session of Congress will see more individual action on the part of the legislators with a lessening of "bloc" moves and the consequent possibility of minor groups gaining strength on some measures.

Excise Taxes—When the House Ways and Means Committee resumes with hearings November 18 its consideration of the tax situation, it is expected that reduction of communication excises will head the agenda and one of the first bills to be dropped in the House hopper in the second session will be for revision of "hardship" excise tax rates.

One tax revision measure, proposed by Rep. Gearhart (R., Cal.), although not unveiled in time to gain the backing of GOP leaders, and to be introduced when Congress reconvenes, would reduce the local telephone service tax from 15% to 3%; the excise on long distance telephone service, telegrams, radiograms, cable facilities and leased wires to be dropped from 25% to 5%; and to reduce from 8% to 2% the tax on wire and equipment services. Rep. Gearhart's bill is aimed at a $5½ billion tax cut, principally reducing income taxes and would raise excises on such things as gasoline, tea, coffee and tobacco.

Minimum Wage—It is expected that intensive efforts will be made to enact a higher minimum wage with additional controls to be placed over workers and industry. In early July, Clyde S. Bailey, Executive Vice President of the USITA, appeared before the House subcommittee considering Pepper minimum wage bill and stressed that wage levels should be geared to the economy of the community affected.

(Incidentally, a revised guide as to coverage of the Wage-Hour Act has been recently issued by the Wage and Hour Division of the Department of Labor, the new bulletin being issued primarily because of the enactment of the Portal-to-Portal Act and to inform employers of all written regulations, orders, rulings, approvals, interpretations, or administrative practices and policies of the administrator upon which employers may place "good faith" reliance under section 10 of the Portal Act. The new bulletin supersedes and replaces all prior interpretations on the question of coverage under the act. Copies may be obtained by writing the Wage and Hour Administrator, Department of Labor, Washington 25, D. C. for the July, 1947, Interpretative Bulletin.)

FCC Reorganization—Senator Wallace White (R., Me.), Chairman of the Interstate and Foreign Commerce Committee, is certain to push for a complete revision of the Communications Act in his last year in the Senate, using this year's White Bill hearings as a springboard. In addition, it is probable that an FCC reorganization measure sponsored by the broadcasting industry will be introduced in the House.

On the subject of FCC reorganization, Commission Chairman Denny has followed the request of Senator White in filing a draft order with the Interstate and Foreign Commerce Committee providing three-division operation of the FCC along the lines discussed by Chairman Denny in his appearance before the Senate group on the White bill. Under the plan the Commission would have three divisions—common carrier, special and safety services, and broadcasting—composed of four members each. The full Commission would settle tie votes, determine jurisdiction of the divisions when overlapping matters arose, and decide questions of general policy affecting the overall activities

of the FCC. Further implementing Mr. Denny's testimony that the system could begin October 1 and should be effective only for a trial period, the draft order specified the October 1 date and provided that the structure would remain in force until March 31, 1948. In that period, Chariman Denny told the Senate group in his appearance, the FCC could study the matter to determine in advance of the expiration date what action should be taken.

◆

CIO Refused Recognition

IN WHAT MAY amount to a serious setback to organizing plans of the Telephone Workers Organizing Committee of the CIO, but which will serve to bring into clear focus the much debated issue of whether or not the CIO group had the majority vote of membership when the American Union of Telephone Workers (long lines) locals voted to join the TWOC, the American Telephone & Telegraph Long Lines Department has withdrawn recognition from the AUTW which has contended it represents the 22,000 long distance workers of the company in 42 states. The A.T. & T. said that the AUTW's claimed affiliation with the CIO had "changed its complexion" and that it was necessary to find out whether it represented the majority of long distance workers. Although it withdrew representation from the AUTW, however, the A.T. & T. proposed three methods of determining the issue. It is felt that the company questioned the voting for affiliation in some locals, such as that which took place recently in Philadelphia where it was reported that out of a unit of 1400 workers, 382 had indicated a desire to swing to the TWOC while 320 had voted against the move, the total vote recorded not amounting to half the eligible voters.

The action of the A. T. & T. highlighted recent action in the telephone organizing field where the CIO, with its new TWOC, and the CWA are carrying on an intense battle to bring non-affiliated telephone workers into their respective camps.

Both sides are claiming major victories in their organizing battle but so far the CWA has been the only group to show concrete evidence of gaining new membership. At present voting is going on in Ohio by employees of Independents and the Ohio Bell on the question of affiliation with results to be announced near the end of this month. If the CWA wins this election it will gain another 10,000 workers to be added to the 6,000 it gained when the Federation of Telephone Employees of Michigan recently voted to bring its members under CWA banners as a new division of that organization.

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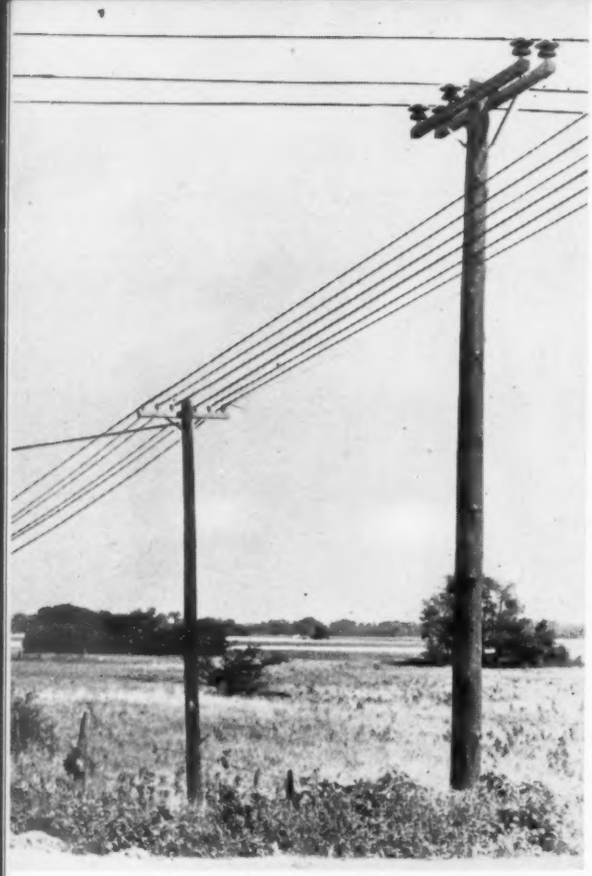

Fig. 2—Three-phase rural power transmission line at crossing with six-wire rural telephone lead.

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Obtaining Adequate Clearance At Wire Crossings

By
J. S. REED

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In FORTNIGHTLY TELEPHONE ENGINEER for November 1, 1946, requirements for clearances of telephone lines from the ground in various situations were discussed. The following article presents data on clearances from power lines and other foreign wire circuits.

ELECTRIC POWER and telephone companies have long recognized the danger of insufficient clearances of telephone lines from power lines at crossing points. As the result of their experience, minimum required clearances in crossing situations have been established to insure that no contact of power wires with telephone wires or cable will result, even under heavy ice loads. These requirements are contained in the National Electrical Safety Code (Handbook H32) and in the rules of state regulatory bodies. Provisions have also been made for minimum permissible clearances of telephone circuits from other foreign circuits, such as telegraph and railroad dispatching lines.

Figures No. 1 and No. 2 illustrate typical wire crossing situations requiring careful observation of vertical clearances between crossing lines.

This article discusses standard requirements for clearances of power and other foreign wires from telephone wires and cable.

Terms Used in Prescribing Clearance Requirements

FOR THE purpose of this discussion, telephone lines are classified as *communication lines* and power lines as *supply lines.*

The communication line classification, as defined in the Safety Code, also includes telegraph, railway-signal, messenger call, clock, or police-alarm, and other systems that operate at not to exceed 400 volts to ground or 750 volts between any two points of the circuit, when the transmitted power is limited to 150 watts. (Communication circuits, operating at less than 150 volts, have no limitation on capacity.)

Supply lines also include railway-signal lines of more than 400 volts to ground. Where the voltage is less than 400 volts, the wires are run, and the equipment is operated in the same way as regular supply lines, such lines are also classified as supply lines.

The forgoing definitions are important, if the proper clearances of telephone lines from these foreign circuits are to be observed.

Minimum Vertical Clearances At Wire Crossings

REQUIREMENTS for minimum clearances, between communication and supply lines at crossings, are specified for the following conditions:

(1) Supply wires in the upper position.

(2) Temperature at 60° F, no wind, with final unloaded sag in the wires of the upper supply crossing line and initial unloaded sag in the communication wires below. (Note: Initial unloaded sag is the original stringing sag before storm loading is applied. Final unloaded sag is

that sag resulting when newly strung wires are stretched for the first time under storm loading, resulting in a permanent sag greater than the original stringing sag.)

(3) Span lengths of the supply wires in the upper position, not over 175 feet in heavy loading districts, 250 feet in medium loading district, and 350 feet in light loading district. (Note: When supply lines consist of 3-strand conductors with 0.09 inch or less diameter strands, the minimum span length shall be 150 feet in the heavy loading district and 225 feet in the medium loading district.)

(4) Supply line voltages of up to 50,000 volts between conductors.

(5) Fixed insulators for the overhead supply line, and heavier grade of construction than in the rest of the line is used.

Minimum basic vertical clearances of telephone and cable from supply lines are listed in Table No. 1. This table is based on requirements specified in the National Electrical Code. (The same clearance requirements apply to telephone cable, measurements being made between the top of the cable messenger and the lowest wire in the supply level above.)

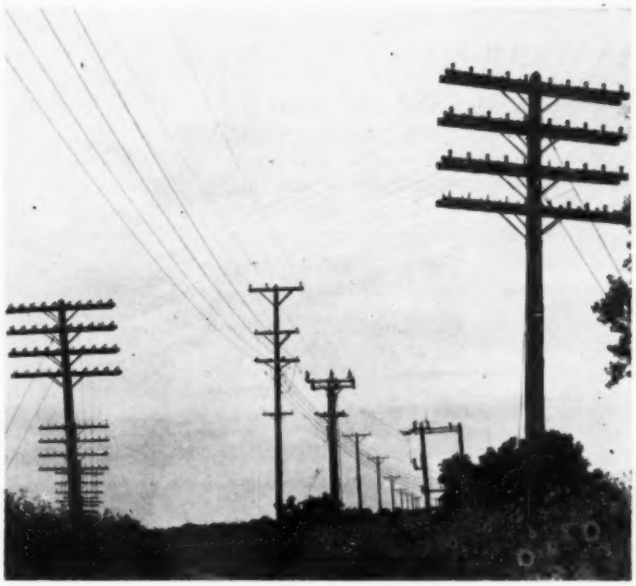


Fig. 1—An important toll open-wire lead passing under 33,000 - volt power line.

The clearances specified are *minimum basic clearances*, which must be observed. It is well therefore to allow more clearance than actually needed in all cases where possible to make sure that the requirements are met at all times.

It will be noted that "passing attachments" of telephone spans are sometimes made on supply line

Table No. 1—Minimum Vertical Clearances at Wire Crossings

Nature of Conductors Crossing Over Telephone Cable, Wires, and Guys	Minimum Clearances from Telephone Wires and Cables	Telephone Guys
(1) Foreign communication cables, guys, and wires, (Note 1)	2′	2′
(2) Foreign communication cables and wires used with supply circuits and not of the same construction as standard communication circuits	4′	2′
(3) Supply cables of all voltages with permanently grounded metal sheath or messenger (Note 2)	4′	2′
(4) Open-wire supply lines, supply service drops, trolley feeders, and supply cable with sheath not permanently grounded (Notes 2 and 3)		
(a) 0 to 750 volts, wires above or below supply service drop and telephone cable below service drop (Note 4)	2′	2′
(b) 0 to 750 volts, telephone cable above supply service drop	4′	2′
(c) 750 to 8700 volts (Note 5)	4′	4′
(d) Multigrounded neutral of 750 to 15,000 volt supply circuit (Note 6)	4′	2′
(e) 8700 to 50,000 volts	6′	4′
(5) Guys to supply poles	2′	2′
(6) Trolley contact conductors crossing under telephone line		
(a) 0 to 7500 volts	6′	6′
(b) 0 to 750 volts for guys and cable protected against chance of trolley pole striking them when on leaving trolley contact conductor, and for wires beyond reach of trolley pole in its sprung position	4′	4′

NOTES:
1. These clearances may be reduced by mutual consent of parties concerned, except for fire alarm wires and wires used in the operation of railroads and supply systems.
2. Unless otherwise authorized, all telephone wires and cable shall pass under supply conductors and cables.
3. It may occasionally be necessary to place a "passing attachment" of telephone wires on a foreign pole in a crossing. Clearances specified in this section apply to the conductors involved in the crossing.
4. When the voltage to the ground does not exceed 300 volts, neutral conductors of supply primary circuits are not involved, and the crossing is not within 6 feet of any pole, a minimum clearance of 2 feet may be permitted, if the supply wires are above the telephone wires or cable.
5. The clearance shall be increased to 6 feet when the supply wires cross over a telephone line within 6 feet horizontally of a telephone pole.
6. Neutral wire effectively grounded at approximately one-quarter mile intervals and located below lowest "hot" wire. This minimum clearance is recommended only in situations when it is impossible to secure the clearance specified in 4 (e) and the voltage of the supply line is not more than 15,000 volts. As a further precaution, the telephone span passing under the supply wires should be made relatively short.

poles. This is done to avoid producing a jog in the telephone line when a supply pole happens to be situated in line with the telephone lead. An example of how a passing attachment is utilized in the case of an open-wire lead is shown in Figure No. 3. To provide for a situation in which a power company has an attachment for a power service lead on a telephone pole, it is often necessary to bring the service lead over the telephone wires instead of under, in order to provide clearance for the lead from the road.

A telephone crossarm placed for a passing attachment must have at least 30 inches climbing space between pole pairs.

Situations Requiring Increases In Minimum Clearances

IT IS NECESSARY to provide greater than the basic clearances specified in Table No. 1 under the following conditions, as outlined in the National Electrical Code:

(1) Crossing span longer than the maximum specified for the loading district involved.

(2) Voltages exceeding 50,000 volts between conductors. In this case, the clearances given in the table shall be increased ½ inch per 1,000 volts over 50,000 volts.

(3) Supply conductors supported by suspension-type insulators at crossings over communication wires. (Power companies are required to provide the proper type of insulators at wire crossings, as specified in the Safety Code, or increase the clearance of their wires from the communication lines to avoid a dangerous decrease in the clearance in event of a wire break elsewhere. An insulator swinging only a few inches out may cause as many feet increase in the sag in the crossing span. Whenever possible, the insulators on the supply crossing poles should be of the fixed type, as illustrated in Figure No. 2. Alternatively, however, the power company may use semi-strain type insulators *at both supports,* suspension strain insulators in a suspended position *at both supports,* or an arrangement of insulators to restrain them from displacement toward the crossing.)

The increases specified are cumulative when more than one of these conditions occur together in the same location.

When the crossing span is longer than the maximum permitted, the following rules quoted verbatim from the Safety Code (Paragraph 233 (B) 1) apply:

"(a) Where the crossing occurs at the point of maximum total sag in the upper conductor, the clearances of table 3 (wire crossing clearances) shall be increased by the following amounts for each 10 feet by which the crossing span length exceeds the limits specified in rule 233, A, 2 (Basic Clearances):

Loading district	Amount of increase per 10 feet: Large conductors, Feet	Small conductors*, Feet
Heavy and medium	0.15	0.30
Light	.10	.15

*A small conductor is a conductor having an over-all diameter of metallic material equal to or less than the following values:

Material	Outside diameter of conductor: Solid, Inches	Stranded, Inches
All copper	0.160	0.250
Other than all copper	.250	.275

The maximum additional clearance need not exceed the following percentages of the 'maximum sag increase' for the conductor concerned:

Loading district	Percentage
Heavy	75
Medium	85
Light	75

The 'maximum sag increase' to which these percentages apply is the arithmetic difference between final unloaded sag at 60° F, no wind, and the maximum total sag under the entire conductor loading of rule 251 (Conductor Loading) for the loading district concerned, or under 120° F, no wind, whichever sag is the greater, computed for the span length for which such difference is greatest.

"(b) If the crossing point is located elsewhere than at the point of maximum total sag in the upper span, the required clearance may be obtained by multiplying the clearance determined in rule 233, A and B, 1 (a) by the following factors, but in no case shall the clearance be less than required by Table 3 (Wire Crossing Clearances):

Distance from nearer support of crossing span to point of crossing, in percentage of crossing span length	Factors for basic clearance of 4 feet	Factors for basic clearance of 6 feet
5	0.35	0.47
10	.47	.58
15	.60	.68
20	.71	.78
25	.82	.85
30	.90	.92
35	.96	.98
40 to 50	1.00	1.00

Interpolate for intermediate values.

The foregoing method of determining the increase over basic clearance involves considerable arithmetic and is hardly satisfactory for field computations. Large power companies and public power districts, however, have prepared tables to show how the proper clearances may be determined in a comparatively simple manner. The following method is an adaptation of one used by a large public power district in the middle west for computing clearances between various types of lines at a crossing:

(1) Measure the span length of the upper crossing conductor.

(2) Measure the distance from the crossing point to the nearest pole supporting the upper conductor.

(3) Ascertain the size and type of supply conductors at the crossing from the power company and consult table No. 2 to determine whether the conductors are large (A) or small (B).

(4) Referring to Table No. 3, locate the section corresponding to the span length and under the first column locate the figure corresponding to the pole-to-wire-crossing distance, or the next higher figure, if the measurement lies between two figures in this column.

(5) Under the column heading corresponding to the type of supply wires at the crossing (service drop, messenger, or guys, and conductor size (A or B), the minimum required clearance for the particular crossing situation will be found.

Table No. 2—Sizes of Supply Conductors Classified as Small or Large for Use in Determining Minimum Clearances.

Kind of Supply Conductor	A Large Conductor (Smallest size of Wire)		B Small Conductor Largest size of Wire)	
	Solid	Stranded	Solid	Stranded
Amerductor		4		6
Copper	6	4-3 strand 2-7 strand	8	4-7 strand
Copperweld	2	4-A 3 No. 8	4	6-A 3 No. 9
Galvanized Steel	2	4	4	6
A. C. S. R.		2		4

The following example illustrates how this method is employed in a typical case of a high voltage supply line crossing over a telephone line. Assume that a 13,200-volt single-phase supply line crosses over a telephone open-wire lead. The span length of the supply line is 250 feet, and the distance from the point of crossing to the nearer supply pole is 95 feet. The supply conductors are No. 2 solid copperweld.

According to Table No. 3, No. 2 solid copperweld is classified as a large conductor, "A". In the 250 feet section of Table No. 2, 95 feet is found to lie between 75 feet and 125 feet; hence the larger figure is selected. The 13,200-volt line falls in the 8,700 to 50,000-volt class; reference is therefore made to the "A" section of the column under this class. The minimum clearance is then found to be 7′ 2″.

If the supply conductors in this example had been No. 6 Amerductor, instead of No. 2 copperweld, the line would have been in the small conductor or "B" class and the minimum clearance then would have been 8′ 3″.

The foregoing method is necessarily approximate, but provides a safe margin of clearance in situations of supply span lengths at the crossing of up to 250 feet in the heavy loading district. As a rule power lines are built with crossing spans shorter than the normal spacing in the line; hence there will be comparatively few situations found where crossings spans are longer than 250 feet.

It will be noted that the additional increase in basic clearance between the upper and lower crossing spans

Fig. 3—Showing use of a "passing attachment" on a high voltage transmission pole for an open-wire telephone lead.

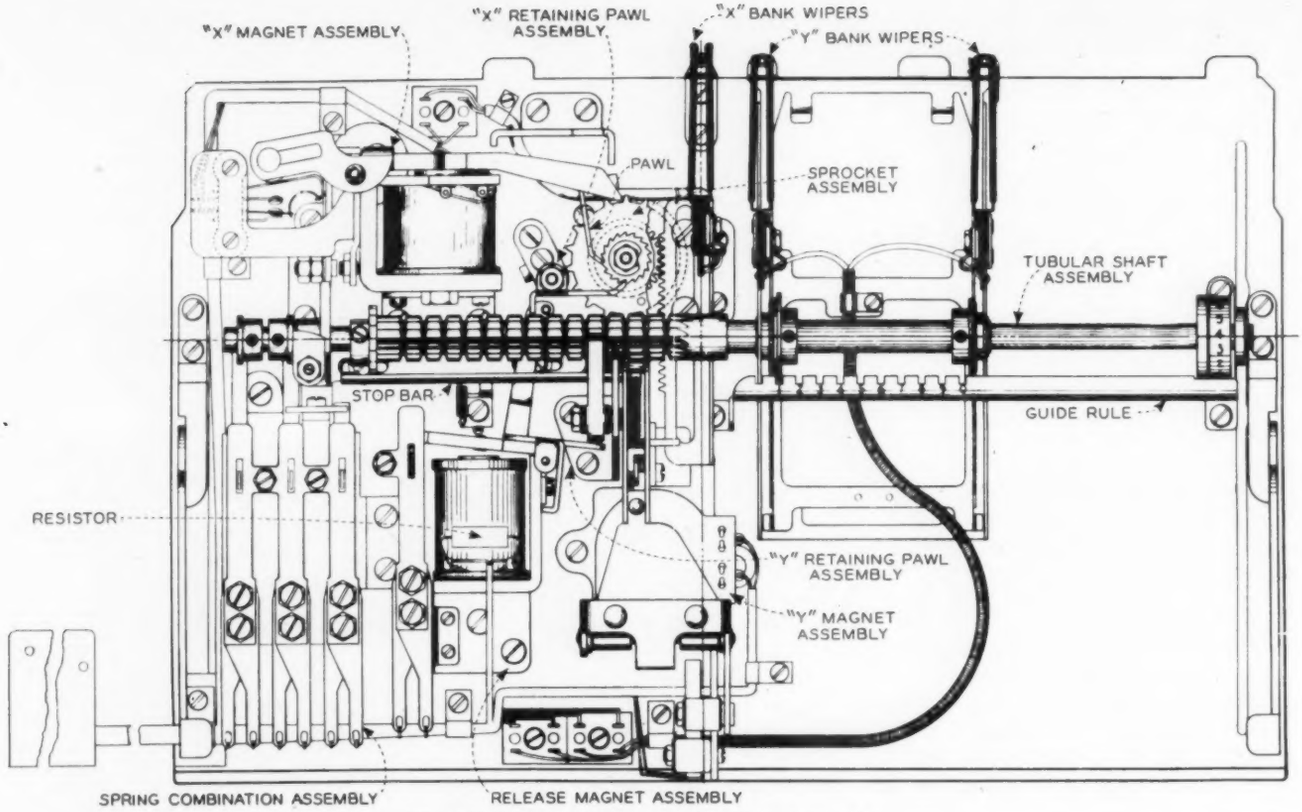
is greater in the center of the upper crossing span than elsewhere. This is due to the fact that ice loads cause the greatest amount of sag increase in this location than in the rest of the span. For this reason it is desirable that a telephone line should cross under a supply line as nearly as practicable to the nearer supply pole as possible, as illustrated in Figure 2. This is often not a difficult matter, since power companies usually place one of their crossing poles near to the roadway at the crossing to obtain maximum clearance for their line over the roadway.

Cooperation between the telephone company and the power company or district is very important in establishing standard clearances at wire crossings and obtaining the proper grade of construction at such locations.—THE END.

Table No. 3—Minimum Clearance Required for Span Lengths of Supply Lines Crossing Telephone Lines.

Span Length of Crossing Supply Line (Note 2)	Distance From Nearer Support of Crossing Span to Point of Crossing in Feet	Minimum Clearance of Telephone Line Under Supply Wires: Under Supply Service Drops Messengers and Guys		Over Supply Service Drops (Note 4)		0 to 8700 Volts (Note 3)		8700 to 50,000 Volts	
175 Feet		2′0″		4′0″		4′0″		6′0″	
		A	B	A	B	A	B	A	B
	100′	2′5″	2′9″	4′5″	4′9″	4′5″	4′9″	6′5″	6′9″
200	75′	2′5″	2′9″	4′5″	4′9″	4′5″	4′9″	6′5″	6′9″
Feet	50′	2′0″	2′3″	4′0″	4′0″	4′0″	4′0″	6′0″	6′0″
	25′	2′0″	2′0″	4′0″	4′0″	4′0″	4′0″	6′0″	6′0″
	110′	2′9″	3′6″	4′9″	5′6″	4′9″	5′6″	6′9″	7′6″
225	75′	2′7″	3′4″	4′6″	5′2″	4′6″	5′2″	6′6″	7′2″
Feet	50′	2′1″	2′8″	4′0″	4′2″	4′0″	4′2″	6′0″	6′1″
	25′	2′0″	2′0″	4′0″	4′0″	4′0″	4′0″	6′0″	6′0″
	125′	3′2″	4′3″	5′2″	6′3″	5′2″	6′3″	7′2″	8′3″
250	75′	2′10″	3′10″	4′8″	5′8″	4′8″	5′8″	6′7″	7′7″
Feet	50′	2′3″	3′0″	4′0″	4′3″	4′0″	4′3″	6′0″	6′5″
	25′	2′0″	2′0″	4′0″	4′0″	4′0″	4′0″	6′0″	6′0″

Notes: (1). Figures in Column "A" are minimum clearances for large supply conductors while those in column "B" are for small supply conductors. See Table No. 2 for classification of these conductors, (2) For 3-strand conductors with wires 0.09 inch or smaller (copperweld 8A, 9½D, 3-No. 12 and Amerductor No. 12), the clearance shown in the table are for spans 25 feet shorter; (3) When a supply line of 750 to 8700 volts crosses over a telephone line within 6 feet horizontally of a telephone pole, the basic clearance shall be 6 feet instead of 4 feet; (4) Minimum permissible clearance to depend on length of telephone span crossing over supply service drop.



The Stromberg-Carlson XY Switch Assembly.

Stromberg-Carlson's XY Dial Telephone System

by

DR. H. R. REED
Chief Telephone Engineer
Stromberg-Carlson Co.

THERE ARE three fundamentally different methods of dial telephone switching in use today, the step-by-step, the power driven, and the all-relay. The step-by-step method utilizes switches which are driven by magnets individual to each switch and controlled directly by dial pulses sent from the calling subscriber's station. The power driven system has much common equipment upon which the operation of all switches depend, in addition, of course, to the office power plant. These switches are not controlled directly by the dial pulses sent from the calling station. In the all-relay system there are no "switches" in the ordinarily accepted meaning of that term, because the so-called switching operations are performed entirely by relays or relay type selecting units. In each system, switches, or their equivalents in relays, are used for connecting a calling subscriber's line with link circuits and to switches which, in turn, connect those link circuits with the called subscriber's line.

Step-by-step dial telephone systems consist of subscribers' dial telephones together with central office switching equipment. The Stromberg-Carlson switching equipment consists of a line-finder, common to a group of subscribers' lines, together with associated 1st and succeeding selectors and connectors. After an idle line-finder has operated to find the calling subscriber's line and thereby connect him through to an associated idle 1st selector, dial tone is received and the subscriber dials the desired number. The line-finder is referred to as a non-numerical switch in that it performs the operation of locating the subscriber's line without the subscriber operating his dial. This switch is started by the removal of the handset of the telephone at the calling subscriber's station and the wipers, or brushes, are moved to connect to the calling line without that subscriber's intervention.

Most step-by-step systems are arranged on a decimal basis in that subscriber's lines or trunks are divided into groups of ten (or multiples of ten) units. In the Stromberg-Carlson XY system, the bank contacts are arranged in ten levels of ten contacts each, because this method offers the greatest convenience in locating the called contacts together with inherent simplicity of circuits.

When the subscriber dials, the first digit dialed sets the wipers of the 1st selector opposite the level corresponding to the digit dialed, whereupon a hunting action takes place to

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when they say
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to do
efficient work

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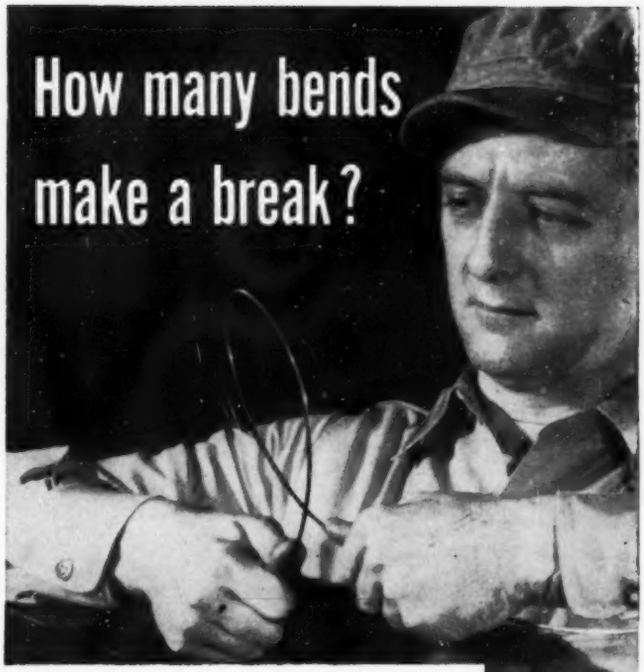

This experiment will show you how to eliminate a major cause of breaks in telephone and telegraph lines.

BEND A PIECE of ordinary steel telephone conductor wire until it breaks. Count the number of bends—it won't be many.

Now take a piece of high strength U·S·S Amertel 135. Reinforce it with two or three strands of stiff wire wound around the conductor. Try to bend it. You'll find that the extra strength makes the assembly extremely difficult to bend.

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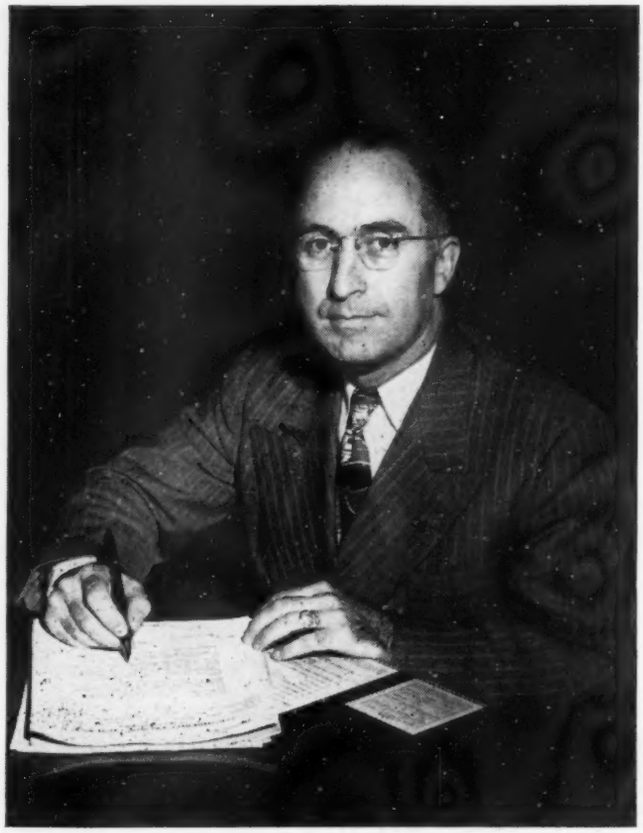
select a trunk to an idle 2nd selector or to the next switching unit in the switch train. The second digit is dialed and the wipers of the 2nd selector are set opposite the level corresponding to the digit dialed and a hunting action again takes place in exactly the same manner as in the case of the 1st selector. The procedure is repeated until all of the selections are made excepting that to the individual called subscriber's line and his particular ringing frequency or code, if he is one of several subscribers on a party line. If the called party is on a one party line, the two remaining digits of his number are dialed and the wipers of the connector switch are set, successively, opposite the level corresponding to the tens digit of the called line and then on the contacts corresponding to the units digit of the called line, whereupon ringing of the called line takes place. If the called party is one of several persons on a multi-party line, a final frequency or code selecting digit is dialed by the calling subscriber and an additional selector switch is operated to select the desired means of ringing the bell at the called station.

From the foregoing it can be seen that each "rank selection" is sufficient unto itself, that is, the subscriber dials a digit and the entire ensuing operation is performed completely within the switching circuit in question. A series of relays, associated with that switch, operate and in turn transmit the impulses received from the calling subscriber's dial to the stepping magnets of the switch which, in turn, set the wipers opposite the level corresponding to the digit dialed. In the connector, similar operations take place except that, unlike the "rank selection" switches, the wipers of the connector are set both opposite the level and on the particular contact dialed, completely under the control of the calling subscriber's dial, there being no hunting action over the contacts of the level selected. The line-finder performs neither a level-selecting operation nor a contact-selecting operation under the control of the calling subscriber's dial, hence it is a non-numerical switch.

The XY Switch

THE XY switch is a flat type of switch and obtains its name by virtue of the fact that the wipers, during the movement to a desired position, traverse first in a direction to the right of the observer and then away from him which, in the right-hand rectangular co-ordinate system, are X and Y directions, respectively.



Dr. H. R. Reed, chief telephone engineer, Stromberg - Carlson Co.

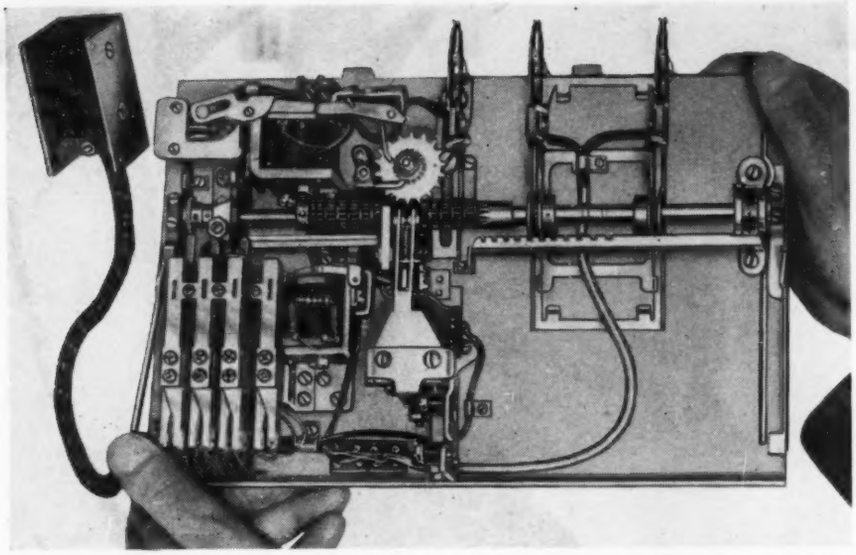
A carriage, which takes the two motions, has two pairs of wipers mounted on it for tip, ring, sleeve and hunt connections. These wipers are bifurcated, employing twin contacts that make connection directly with bare wires which run in banks behind the switches. The bare wires are arranged in molded frames which are mounted rigidly to cells that, in turn, hold the switches. This group of bare wires, or multiple, will accommodate up to 50 switches with only one set of soldered connections.

The switches are mounted in die-cast aluminum cells, each cell capable of mounting two switches, and are connected to their associated relays by means of plugs and jacks. Because of the ease with which switches can be added to a unit, only those switches which are required to accommodate current traffic need be mounted at the time of the installation and additional ones added as traffic conditions increase.

Because the XY switch is a 100 point switch, the X motion is given ten steps (plus one which provides for marking overtravel) and the Y motion ten steps, thereby making possible the selection by the wipers, of any one of 100 lines. An eleventh step in the Y direction again marks overtravel. Because four wipers are involved and each wiper has its own set of 11 wires, 44 rows of wires each 11 deep are lined up along the front edge of the mechanism plate, immediately before the wipers, to form the multiple.

To mark the level of X travel, for finder operation, timing or discriminatory purposes, another wiper enters a separate or 23rd wire bank.

Four sets of control springs are used in the XY switch: X off-normal, Y off-normal, overflow, and release. The X and Y off-normal springs perform similar functions, that of informing the relay equipment associated with each switch as to the position of the brushes or wipers. Operation of the X off-normals, for instance, indicates that the switch has taken at least a single step in the X direction. Operation of the Y off-normals similarly indicates that at least a single step has been taken in the Y direction. In the event of certain incorrect dial manipulations or an all-trunks-busy condition, hunting switches may progress the entire length of the bank without encountering a stopping signal. Unless some means of correction were provided, they would continue to hunt vainly until the circuit was de-energized. Overflow springs, arranged to operate in the extreme position of the



The Stromberg-Carlson XY Switch is the heart of the XY system. Switch was first developed by Telefonaktiebolaget, L. M. Ericsson of Stockholm, Sweden.

wipers in either the X or Y directions (namely the eleventh X or Y step), interrupt the magnet current in order to stop instantly and permanently useless stepping until the switch is released.

The release springs have two important functions in connection with the release of the switch. First, it is necessary to continue the release signal until the switch is fully home despite any immediate re-energization of the circuit which might occur. Second, there must be positive protection against premature seizure of a switch before it is fully home.

All Stromberg-Carlson XY switches are identical whether they be used as line-finders, selectors or connectors. The variations in functional operation are obtained by virtue of the relays to which a switch is connected and not by the switch itself.

XY Equipment

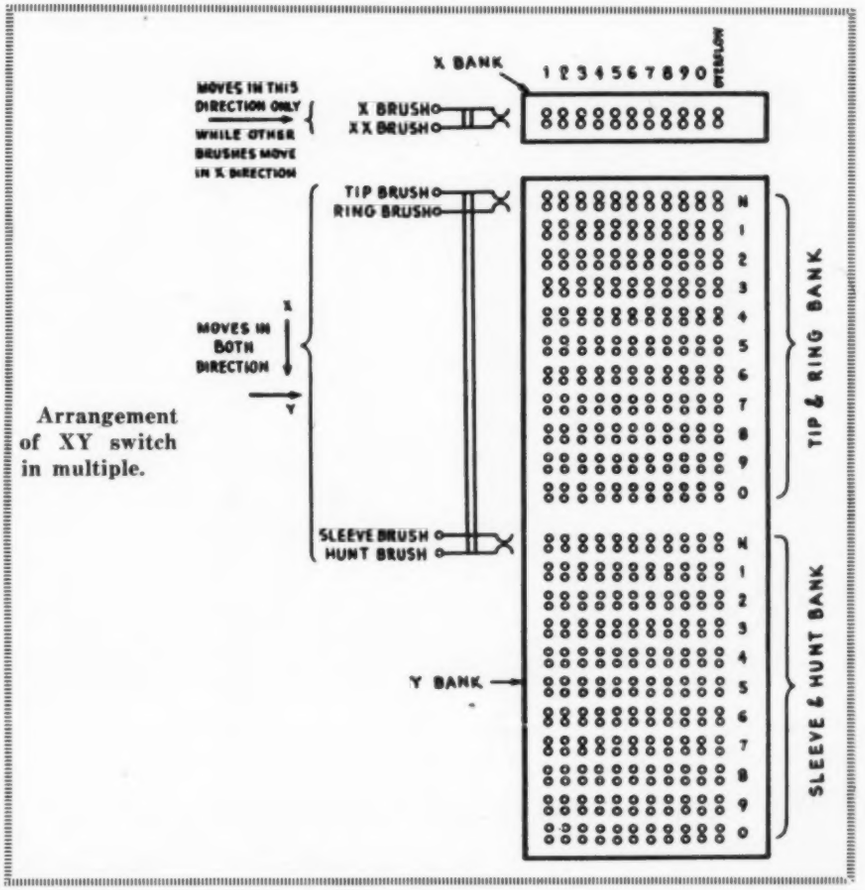
THE XY switches, together with their control relay sets, are mounted on frames to form bays. These frames assume various sizes and shapes depending upon the equipment to be mounted on them.

In general, bays are of four distinct types. These are (1) orginating or finder-selector bays which mount the XY switches (with associated relays) that find the calling subscriber's line as well as the switches that make the first selections in the call, (2) intermediate bays which mount the various stages of selectors, other than the first, (3) terminating or connector bays which mount the switches used to connect to the desired parties, and (4) miscellaneous bays used for various purposes such as cross-connecting and grading of selector multiples, mounting of inter-office trunk circuits, power charge and discharge units, and Wire Chief test facilities.

The relay mounting strips contain one, two or three rows of relays, condensers, and associated apparatus. The two-row strip occupies the equivalent space of two single rows or the height of the two-switch cell, while the three-row strip is equivalent to three single rows. On the rear of the strip are mounted the appropriate number of mutiple-point plugs to fit into jacks to which the frame cabling is attached permanently, and on the front is mounted a multiple-point jack to which the XY switch plug attaches. The relays are protected on the back by the bay framework and other relays and on the front by removable formed covers.

The originating bay mounts the regular terminal blocks for incoming cables, the fuse panel for power distribution within the bay, and the following switching circuits for handling the originating or calling end of a maximum of 100 subscriber lines. On the front of the bay are twenty line-finders arranged in two groups of 10 line-finders each, one dual allotter consisting of two circuit units each of which is associated with one of the two line-finder groups, and 20 first selector circuits, also in two groups of 10 selectors each, these being tied to their respective line-finders. This bay has then, a capacity of 20 links or finder-selector combinations to give a possibility of 20 simultaneous outgoing connections from the particular 100-line group.

(*Please turn to page* 70)



Arrangement of XY switch in multiple.

TENS OF THOUSANDS

WRITE FOR CATALOG

.eich Sales Corporation, 427 West Randolph Street, Chicago 6, Illinois
Please send catalog and price list on No. 86 and other magneto telephones.

NAME OF COMPANY _____

ADDRESS _____

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LEICH

S NOW IN SERVICE—

LEICH'S EIGHTY-SIX MAGNETO TELEPHONE

Skeptical, cautious telephone men have been intrigued by the Leich No. 86 magneto telephone. They ordered . . . *one*. Weeks passed. They ordered several more. And then they reordered . . . and re-ordered. The Leich 86 had proved itself on the job.

We've seen it happen again and again, until tens of thousands of these Leich 86's are now giving faithful service.

If you haven't used this modern magneto telephone as yet . . . let these tens of thousands now in operation induce you to investigate it . . . now.

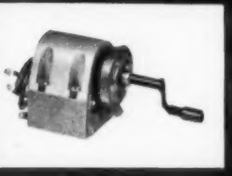
The Leich 86 is a complete magneto wall telephone, with an attractive, modern, all-Bakelite case. It can readily be separated into a desk set and generator box, using the same parts, same housing. The Leich Alnico generator is universal, can be used in place of all 3, 4, and 5 bar generator models. Good transmission and reception are guaranteed, even on long, heavily loaded lines.

This Leich 86 is the wisest investment you can make, yet it costs no more than the ordinary magneto telephone. Write today for catalog and price list. Use the handy coupon below.

Look at These Advantages

MODERN, ALL-BAKELITE CASE

SAME HOUSING FOR WALL OR DESK MOUNTING



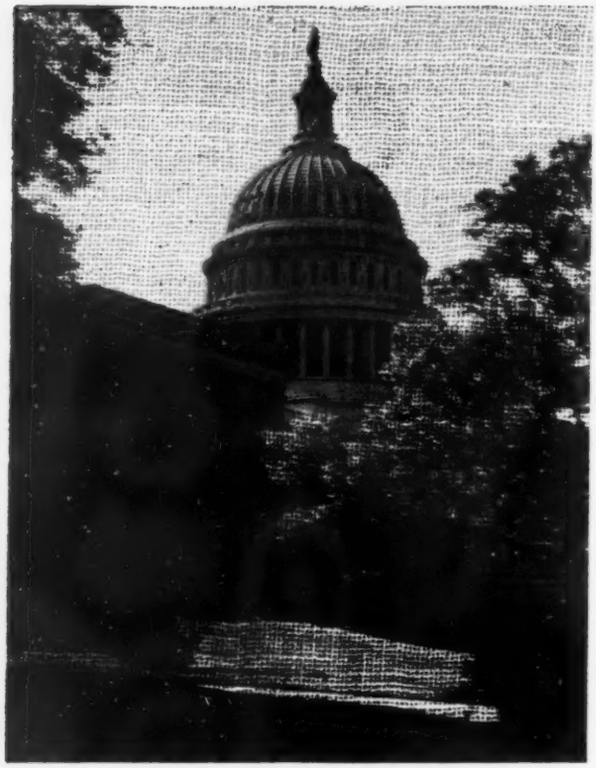
ALNICO GENERATOR, REPLACES ALL 3, 4, & 5 BAR MODELS

NEW HANDSET UNIT—IMPROVED TRANSMISSION AND RECEPTION

30 DAY DELIVERY ON ALL STANDARD MODELS

IN NO OTHER BUSINESS . . . . IS FINE EQUIPMENT MORE APPRECIATED OR MORE NECESSA

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 190



★ COURT and COMMISSION Activities ★

New Labor Law Invoked In Suit

In the first suit filed in Chicago under the recently enacted Taft-Hartly labor act, the Illinois Telephone Traffic union recently filed action in federal District court seeking recovery of $12,711.95 from the Illinois Bell Telephone company.

Edward R. Hackett, attorney for the union, said the suit was filed in federal court under title three of the act on the basis of his claim of violation of contract.

The suit alleges that this amount of money was taken from the pay checks of approximately 9,700 non-supervisory employes for the last pay period in March, just prior to the start of a five week strike on April 7. The money represented membership dues and initiation fees under payroll deduction authorization.

Mr. Hackett said that although a demand had been made on the telephone company on June 2, the company so far has refused to turn the money over to the union treasurer.

◆

Rate Increase Approved For Indiana Independent

Approval of rate increases of approximately 30 per cent by the United Telephone Company of Warsaw, Indiana, was granted recently by the Indiana Public Service Commission.

The new rate covers 72 exchanges of the company in Northern and Central Indiana. With the exception of the exchanges in North Liberty and North Judson the new rates became effective August 1.

The company was ordered to improve the service in North Judson and North Liberty before the increased rates can be put into effect there.

The Indiana Commission also granted authorization for the company to issue $2,600,000 first mortgage bonds, 6,000 shares of $100 par value preferred stock and 2,355 shares of $50 per value comon stock.

◆

Treasury Dept. Issues Study of Communications Excises

The Treasury Department has released a 37-page staff study entitled "Excise Taxes on Communications", as one of a series on excise taxes being prepared to assist Congressional committees in postwar tax revision.

The study gives a history of the communication taxes and discusses their effect upon earnings but carries no recommendations and is stated to "reflect only the views of the Treasury Tax Staff." Lumping toll telephone, telegraphy, leased wire, and wire and equipment services together the report states that estimated federal tax revenues for 1947 will amount to $255,500,000, and that federal taxes on local telephone service will amount to $165,500,000. Figures presented for 1944 show that telephone service comprise in dollar volume about 75% of taxable long distance communications service, domestic telegraph 15%, and international telegraph and leased wires each about 5%. The report states that 60% or more of total expenditures for long distance com-

➡ WHAT THEY'RE SAYING...

R. A. Lumpkin
President, United States Independent Telephone Asssociation
(From Address Delivered at California Convention)

"But the point is that local revenues must not be overlooked lest we lose the precious element of stability that characterized our business in the late twenties. For whereas in that earlier era a decline of 20 per cent in toll revenue would have had but a mild effect on net operating income, such a decline from the 1945 level would have cut in half our earnings for that year. Furthermore, a return to the 1942 toll revenue level would have wiped out all net operating income in 1945.

"To me there is far greater significance in these figures than the mere fact that times have changed, that operating conditions are vastly different from twenty years ago. It is clearly apparent that in any future period marked by a substantial decline in business activity, telephone earnings will more nearly parallel the general industrial pattern."

munication services are for business purposes.

The report states: "The effect on profits 'is probably least serious for the telephone business where facilities now are being used at close to capacity. . . . The rate of return in this industry generally has been so favorable that rates for long distance service have been declining. Under such conditions the existence of the tax would normally tend to postpone rate reductions rather than decrease profits.'"

◆

Salem, Ore., Plans Rate Boost Fight

The hearing of the application of the Pacific Telephone & Telegraph company's request for rate increases in progress in Salem, Ore., was recessed until August 18 at the conclusion of the company's presentation of its direct testimony in support of its application.

Testifying on the effect of the requested rate increase on the company's revenues, F. D. Tellwright of Portland, vice president of the company and manager of the Oregon area, said that if the rate increases are granted as requested the company could expect a net return on its Oregon investment of between 5 and 6 per cent, for the last half of 1947. This, he explained, would compare to a net return of 3.43 per cent, for the last half of 1946 and an estimated return of only 2.03 per cent. if present rates are continued in effect. The estimate for the last half of this year, Tellwright explained, was not based upon wage increases granted to telephone employees last June but other conditions as of the last half of 1946.

However, Tellwright hastened to explain, it could not be expected that the net return of the company would remain at the rate of between 5 and 6 per cent because of additional wage increase provisions written into the June contract. Additional plant investments planned by the company, which Tellwright declared to be absolutely necessary if the company is to meet demands for increased services, also would be reflected in a downward trend in the company's return even with the higher rates in effect.

Despite denial by Oregon Public Utilities Commissioner George H. Flagg of a request by the Pacific T. & T. for a temporary rate increase, the Salem city council indicated continued interest in the proceedings by passing a resolution calling for formal intervention and an ordinance for hiring a consultant.

The emergency ordinance calls for the hiring of Fulton Y. Magill of Tacoma on a per diem basis. His salary under the ordinance is to be $50 a day plus $12 expenses, and $1000 was appropriated from the emergency fund for this purpose.

◆

Newfolden (Minn.) Company Receives Rate Boost OK

The Newfolden Central Telephone Company has Minnesota Railroad and Warehouse Commission approval of its application for authority to change its schedule of telephone rates and charges at Newfolden.

◆

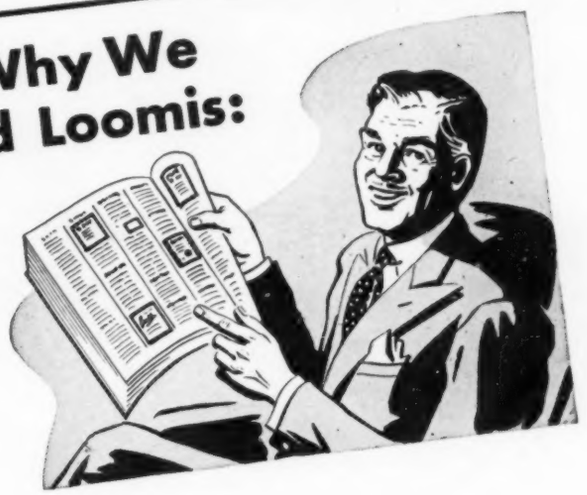
Council Ruled Rate Arbiter

In an oral ruling, City Attorney J. Glenn Donaldson, of Denver, Colo., recently stated that the Denver city council had the right to approve or disapprove a telephone rate increase asked by the Mountain States Telephone & Telegraph Company.

Mayor Newton said that the city will hold three meetings regarding the rate application—the first with tele-

(*Please turn to page* 46)

Here's Why We Selected Loomis:



"The Loomis reputation for creating consistent gains in directory advertising revenues for the companies it represents helped us make a decision . . . for we realized that extra income from this source is going to be vitally important in the years ahead.

"Then . . . we like to have our company presented to the business firms of our community by means of the ethical, good-will building sales methods Loomis employs. Increased profits and improved public relations looked good to us . . . too good to pass . . . so we selected Loomis."

Loomis ADVERTISING COMPANY

502 Gettle Bldg., Ft. Wayne 2, Ind.
506 Olive St., St. Louis 1, Mo. 20 West 9th St. Bldg., Kansas City 6, Mo.
6908 Market St., Upper Darby (Phila.) Pa.; Omaha Nat'l Bank Bldg., Omaha 2, Neb.

The Automatic Electric Type 40 Monophone leads the Industry in advanced styling and operating efficiency. Read this description of its engineering refinements.

UNDER COVER

Lift the cover of the Automatic Electric Type 40 Monophone and check the many features that make it your best choice in modern telephone instruments. Observe the simplicity of its anti-sidetone Monophone circuit with its associated switching spring assembly, famous "quieted" dial and efficient short-air-gap induction coil. These parts constitute the "nerve system" of the Automatic Electric Monophone. Completely protected from dirt, insects and other foreign bodies, they nest neatly within the housing for easy accessibility and inspection.

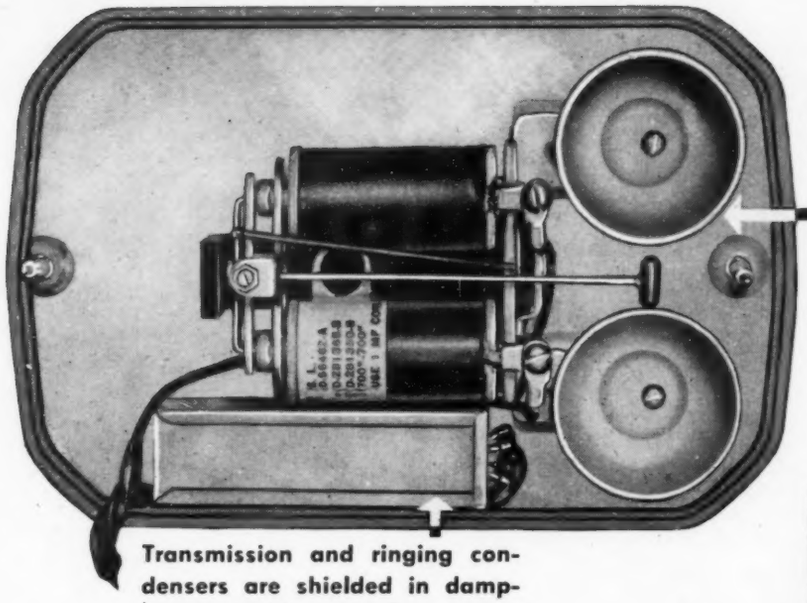
See, too, how the arrangement of the components on the baseplate permits ample spacing of the sturdy two-tone ringer assembly and the transmission and ringing condensers, both of which are shielded within a protective metal housing. Since it is almost never necessary to remove the condensers, their connections are permanently joined. Note that all other terminal connections are also made secure, to prevent annoying and costly "opens" caused by looseness or corrosion. Here's one more reason why telephone men by the hundreds know and prefer this trouble-free Monophone. It's built not merely for easy maintenance, but to keep maintenance to a minimum!

Automatic Electric Monophones are available now for current delivery in reasonable quantities. Place your order today for early installation.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants
Distributors in U. S. and Possessions

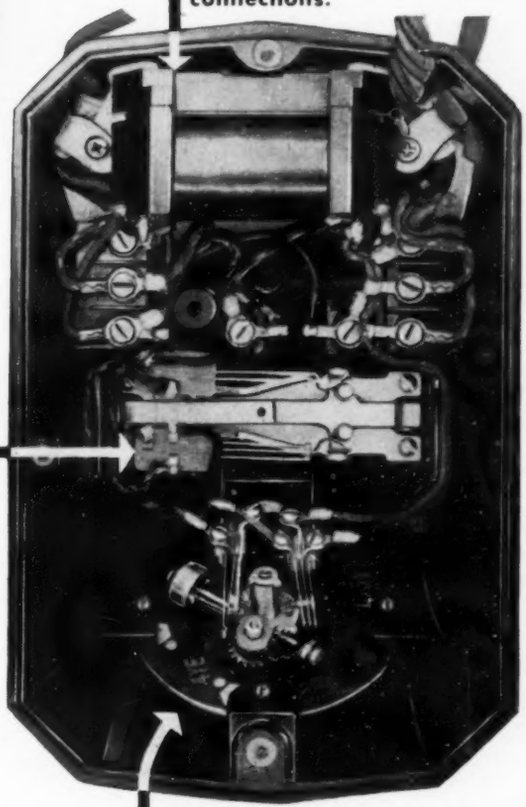
AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago 7, U.S.A.
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION



Ringer assembly with two-tone gongs is rubber cushioned to minimize vibration. Full-size coils insure positive ringing on long, poor lines.

Highly efficient short-air-gap induction coil, silk-wrapped for protection against moisture, has permanently soldered terminal connections.

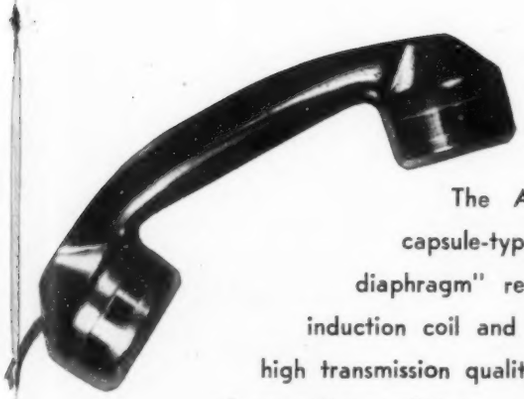
Transmission and ringing condensers are shielded in dampproof metal housing. Permanently soldered connections eliminate possibility of circuit breaks caused by friction-held contacts.



Switching spring assembly has two plungers, co-ordinated for positive action and compactness.

The famous Automatic Electric "quieted" dial. Terminal connections are of the fixed, screw type to insure positive full-voltage impulses.

ER FACTS about Automatic Electric's TYPE 40 MONOPHONE



The Automatic Electric Monophone handset has capsule-type "all-positions" transmitter and "damped diaphragm" receiver. In conjunction with the Monophone induction coil and Monophone anti-sidetone circuit, it provides high transmission quality and volume over an extremely wide range of operating conditions.

phone company officials, the second with the Colorado Public Utilities Commission, and the third with other home rules cities in Colorado where rate hikes have been requested.

The city will not decide what attitude it will take toward the telephone company application until all the facts have been learned, the mayor declared.

◆

House Group Defers Action On Minimum Wages

With criticism from business that the proposed raise of the statutory minimum wage to 60 or 65 cents hourly is too much, and from labor that it is too little, the House Labor subcommittee considering the subject voted to defer action on the matter. The group plans to reopen hearing in the fall.

◆

Rate Boost Approved For New England Bell

The Public Service Commission of New Hampshire has granted New England Telephone & Telegraph Co. temporary rate increases which will amount to about $780,000 on an annual basis. This is just about three-quarters of the $1,063,000 which the company had sought on the basis of expected 1947 operations.

Clyde J. Heath, vice president and treasurer of the firm, stated that the company has no alternative but to accept the reduced amounts authorized by the commission. He said the company would reapply later for such further rate increases as may be necessary to provide an adequate return on its New Hampshire investment.

The amount of increased revenue temporarily authorized by the commission will approximate $65,000 per month. This total, Mr. Heath said, will not overcome the company's current financial losses in its New Hampshire operations, which for the quarter ending June 30, 1947 were running at the rate of about $90,000 per month.

◆

CWA Contract With Independent Depends On Commission Action

In an agreement dependent on a decision of the Kentucky State Commission, wage increases ranging from $2 to $5 a week, a union shop and other gains have been granted workers of the General Telephone Corp. The workers are members of the Ashland (Ky.) CWA Division No. 59. The Contract provides, however, that wage increases will be put into effect only after granting of rate increase request now before the Kentucky commission.

The Union shop provision of the contract requires that all employees on the payroll of the company after the effective date of the contract must become and remain members of the union as a condition of employment, and that new employees must become members within 90 days after being hired.

Two other new contracts have also been negotiated between CWA Divisions and Independent telephone companies. A new agreement between the Two-States Telephone Co., Texarkana, Ark. and CWA Southwestern Division No. 20, representing plant workers, includes a wage increase of 12 cents an hour, time and a half for Sunday work, three weeks vacation for 15-year employees and Armistice Day as an additional paid holiday. Traffic workers of the Two-States company are represented by the IBEW.

A new contract between the Virginia CWA Division No. 33 and the Clifton Forge-Waynesboro Telephone Co. calls for a $2 per week across-the-board increase for the 70 workers covered by the contract, which became effective August 3. Added to the $2 to $4 increase negotiated last December, the new agreement will bring the total wage increase in less than a year to $4-$6. In addition cable splicers' rates were increased from a top rate of $1.30 to $1.45 an hour. The company, located at Clifton-Forge, Va. was organized by the NFTW about a year ago.

On the subject of new wage contracts, the CWA announced that its Indiana Division No. 1 had signed a contract with a contractor covering pole setting and other work being done for the Indiana Associated Telephone Co. The contractor agreed to a wage contract but pointed out that his workers were non-union and requested that they be admitted to CWA

Across the ATLANTIC In 1-20th of a SECOND

IF IT WERE POSSIBLE to fire a shot from a modern high-powered rifle, and the bullet could sizzle across the Atlantic at undiminished speed, it would take an hour and a half to reach England. By overseas radiotelephone, despite all the scrambling, amplifying, reamplifying, and unscrambling that goes on, the human voice travels the distance in about one twentieth of a second!

In a uniform medium, radio waves travel in a straight line. If there were nothing to stop them, they would travel right out into interstellar space, instead of following the curvature of the earth. What bends them back to a point on the other side of the globe? It's a layer of electrified particles, or ions, betewen 150 and 250 miles up, which surrounds the earth just as cellophane surrounds a ball of wool. When the waves hit this roof, they are bent back toward the earth, and it is on this rebound that they are picked up by the receiver.

It would be very nice if the ionosphere would bend the radio waves back to earth at exactly the same angle all the time. Unfortunately, the density and height of the roof varies with the intensity of the sun's rays. In directing his carom shot, the radio engineer has to use a different type of ball (or frequency) at different times of the day and year in order to hit the right pocket (the receiving station).

Low frequencies (longer waves) are bent more sharply than high frequencies. Therefore, on a cold winter night, when there are not many ions to bend the waves back to earth, the engineer might use the lowest frequency at his disposal. On a hot summer day, low-frequency waves would rebound too sharply for his purpose, and he would use a shorter wave-length.

Sometimes the radio waves carrying a conversation travel along different paths. Arriving at the receiving station, they then interfere with each other, as water waves from two large vessels interfere with each other. This causes "fading".

Your Aunt Ethel, talking from London, might first sound muffled as if she were in a closet. The next minute she might seem to be shrieking in your ear. The engineer comes to Aunt Ethel's aid, however, with an automatic volume-control device. It tones down her involuntary shrieks, and helps her shout through the cupboard door.

—H. G. Owens in The Blue Bell.

membership. This was arranged and the agreement drawn up between the contractor and union provides for prevailing or higher wages on the work he is doing.

◆

Refuse Revocation of Illinois Commercial Increase

The Illinois Commerce Commission on July 29 refused to revoke an order granting the Illinois Commercial Telephone Co. a 25 per cent increase. The revocation was sought by 31 communities, including Macomb, Monmouth, Kewanee, Lawrenceville, Carbondale and Paxton.

◆

Illinois Commission Corrects Illinois Bell Rate Order

The Illinois Commerce Commission on July 27 issued an order eliminating all zoning and toll increases and restored the five-minute limit on suburban calls, thus correcting the "error" of the June 24 order to Illinois Bell. In addition it ordered a refund of all such overcharges collected since July 1, which will total $400,000 and will be applied on next month's bills. The order reduced the amount of increases from $20,000,000 to $15,000,000.

The contested section of the order resulted from a staff error in Springfield, members of the commission said. The increases as now set by commission order are $1.00 a month for business telephones, 50 cents for residential telephones and 25 cents for rural telephones.

◆

New Exchange Approved For East Bend, N. C.

J. L. Keiger, Jr. has been granted authority by the North Carolina Utilities Commission to provide and maintain an automatic telephone exchange at East Bend, N. C.

In support of his application, Mr. Keiger filed a petition signed by 51 residents of the town of East Bend which reads as follows:

"In as much as East Bend, North Carolina has never been provided with local telephone service and considering that The Southern Bell Telephone System nor any other telephone company has never endeavored to provide such a service, we the citizens of East Bend hereby petition J. Lee Keiger, Jr. to provide and maintain an automatic dial telephone exchange within the corporate city limits of East Bend. It is agreed that the service shall be 10 party line, coded ringing, dial service for which we will subscribe and agree to a connection fee of $7 50 and a monthly rental of $2.00 for each residence phone and $2.50 for each business phone."

The commission order stated that, rates for the proposed multi-party service to be given are considered reasonable, and will be authorized when tariff is filed and service supplied. The proposed connection charge of $7.50 was not authorized as the commission stated that such charges must be in accordance with the charges for this class of service provided for in the Commission's General Exchange Tariff prescribed for telephone companies whose annual revenue is $50,000 or less.

◆

Amery (Wis.) Independent Plans Improvement Program

The Amery (Wis.) Telephone Company has announced a $30,000 improvement program that includes plans for a new building and additional equipment.

Get 60-SECOND Splices
STRONGER THAN THE LINE ITSELF
The NICOPRESS Way
1. CLEAN ends of wire . . . . . .
2. INSERT wire in sleeve . . . . . .
3. COMPRESS with Nicopress Tool . . . . .
Order Your Nicopress Tools and Sleeves of
AUTOMATIC ELECTRIC SALES CORPORATION
1033 WEST VAN BUREN STREET, CHICAGO 7, ILL.

★TELEPHONE ENGINEER and MANAGEMENT'S

PRACTICAL--

"HOW TO DO IT"

SUGGESTIONS . . .

CLEANING & RODDING DUCTS . . .

TELEPHONE cables beneath city streets are generally run between man-holes through ducts made usually of vitrified clay, sometimes of other materials. So much underground cable is now being placed that the application of mechanical energy to the jobs of cleaning and rodding ducts takes on added importance. Two ways to apply power have been developed.

With one method, four-foot metal rods are joined and pushed forward through the ducts by hand at the same time that they receive a twisting motion from a small engine. When pushed direct, they can be moved ahead only 300 to 400 feet; with the added twisting action imparted by the moto., that distance can be increased by from 50 to 100 percent.

The other method employs a truck-mounted machine which thrusts and twists a continuous flexible spring-steel rod into the duct. The ratio between thrusting and twisting can be varied to meet different conditions; the machine has been found to be effective up to distances of 1000 feet; it will withdraw the rod from the duct as well as drive it forward.

• • •

STERILIZATION OF AIR IN OPERATING ROOMS . . .

EXPERIMENTS are being conducted on large scale installations of air purification units. It has been definitely shown that air-borne respiratory infections cause about 35% of all personnel absences in industrial establishments. Air sterilization can be accomplished by a combination of ultra-violet lamps, use of glycol vapors, and electrostatic dust precipitators. Ultra-violet lamps are effective in substantially reducing the bacteria count in air when used in conjunction with other aids such as the **glycol vapor.** Glycol vapor has a strong affinity for water, hence, tends to absorb bacteria present in water particles floating in the air thus killing any bacteria present. Electrostatic dust precipitators are effective in knocking down bacteria passing through a ventilating system.

Trial installations of these combination "sniffle stoppers" are being tested in both private homes and industrial installations in several places in the country. The initial conclusions are that they will be effective in materially reducing lost time due to common colds and other respiratory infections. Whether or not the effectiveness of these air sterilization systems in a place of business will be more or less nullified by the contact the employee has with germ spreaders in crowded places such as busses, restaurants, etc. remains to be seen. Air conditioning systems with the added feature of "bacteria suppression" should prove attractive to telephone companies operating large manual exchanges where common colds spread from operator to operator and have always been the most prominent cause of lost time due to sickness.

• • •

PLASTIC CLAMP SUPPORT . . .

A NEW TYPE clamp support, designed for mounting wires, cables, tubes, pipes, rods, hose, is being well received in the telephone industry

The supports are made of a tough plastic with great tensile and impact strength. Compared to metal, it is claimed the supports are excellent insulators, insuring against short circuits. They withstand extreme temperature changes of 78 degrees below zero or up to 180°F., are unaffected against atmospheric conditions. Since the material is pliable, the support opens to any dimension to slide over wires, pipes, tubes, etc.

New plastic clamp supports.

◆

MODERNISTIC COMMERCIAL COUNTER

THE BELL COMPANY in Indianapolis has recently installed in one of their offices a new payment turret which has proven popular with both customers and subscribers alike. This counter has six payment positions and is so designed as to place the correct distance between the customer and the teller. Small markers at each position display the name of each teller. Indirect lighting, proper ventilation, and interesting photo-murals on the walls behind the counter tend to make this modern installation outstanding.

• • •

TRENCHERS & AUGERS . . .

In the final development stages are two new types of trenching machines for burying cable, which are expected to meet telephone construction requirements. One type will be used to place cable at relatively shallow depths in order to avoid gas and water pipes in urban areas, handle a minimum amount of earth in excavating, and lay the cable so it will be protected by the sidewalk. Light weight and low cost of the machine for this work are more important than the speed of operation.

The second type of trenching machine will be used for cross-country work. It will be faster and will lay the cable as it digs—a procedure not feasible in cities because of crosswalks and streets.

Relatively new is a new portable pole-hole digger. When operated on a truck, the unit consists of an earth auger driven by a small air-cooled gasoline engine through a flexible shaft and raised and lowered by the truck winch and derrick. Due to its lightness and flexibility of operating positions, this digger can be used on

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

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COLUMBUS 6, OHIO

"MEGGER"* INSULATION TESTER

*T. M. REG. U. S. PAT. OFF.

Whether in central office or out on the system, your "Megger" Insulation Tester is an unfailing detector of weakened insulation.

Simply turn the hand crank to generate 500 volts D.C. Read insulation resistance by pointer deflection. Always ready for use any time . . . anywhere . . . the new U. S. model in rugged plastic case weighs but 8 pounds. Telephone model has guard terminal and capacitance discharge switch. Write for Bulletin 1735-TE—today.

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ELECTRICAL & SCIENTIFIC INSTRUMENTS
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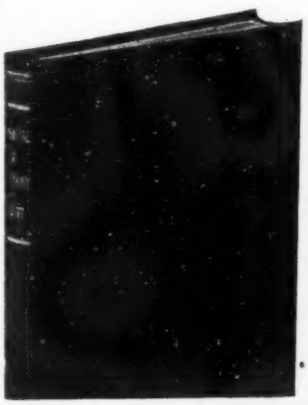
A Simple, Up-to-the-minute Guide to Telephone Fundamentals

to give you the groundwork you need for best results in practical work



This first new telephone book in years tells how modern telephone systems operate, giving the electrical theory and the technical information on equipment and circuits that will be most helpful as a foundation for the non-engineering worker in telephone installing, servicing, etc.

FUNDAMENTALS OF TELEPHONY

374 pages, 5½ x 8½, 200 illustrations, $3.75

This book provides the telephone worker with an understandable treatment of the technical aspects of his work, valuable as a key to better results and improved skill in any job he may undertake. The fundamentals of electricity and acoustics are covered, followed by a full elementary treatment of telephone equipment and circuits, their elements, characteristics, functions, etc., illustrated by many numerical examples.

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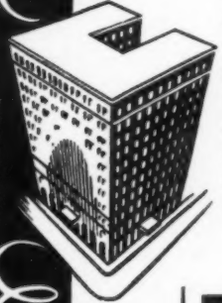

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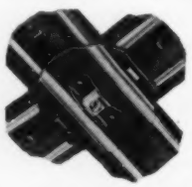
Chance All Steel Expanding Anchors are specified by engineers who know the value of equal distribution of holding power.

Built of tough, heavy ribbed steel, they *dig in* to solid earth with a minimum of soil disturbance and *hold* without danger of creeping or pulling out. The powerful blades expand in opposite directions, equalizing strain. Grooved guideways eliminate side twisting. For 21 years Chance Steel Expanding Anchors have been on the job, giving complete satisfaction. Once they're in — they're in to stay!

Destructible Nut Retainer



Prevents the anchor from riding up the rod during installation. Permits driving the rod through the anchor into the ground when abandoning the anchor, and also acts as a truss brace.

How much will an anchor HOLD?

Chance engineers have developed a new formula for determining the type and kind of anchor to use for every guying condition. Your copy is ready and will be sent upon request.

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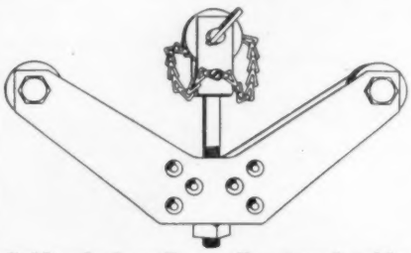
light trucks, being adapted to any truck equipped with winch and derrick but best suited to operating with the T-type derrick. It can be changed from one truck to another in a few minutes.

Heavier earth-borers are used where very difficult soil conditions make it impracticable to use the lighter digger. For operation in places inacessible to trucks, such as swamps, medium and heavy-duty borers have been mounted on caterpillar tractors. However, the lack of traveling speed and the fact that usually the caterpillars are not permitted on pavements limit their use in pole setting to large jobs of continuous new pole lines.

• • •

CABLE SLACK-PULLER . . .

A LARGE part of the aerial cable installed during the past few years has been supported by lashing it closely to the suspension strand. When the cable is to be spliced, as for instance to connect a terminal, working space for the splicer's fingers must be supplied between the cable and the strand. A tool has been developed which not only pulls the strand aside



Cable slack puller pulls strand aside.

but draws it tighter so as to leave the cable slack. As the illustration shows, the slack-puller has a V-shaped steel frame which supports a grooved roller at each end; another grooved roller in the center. The lifting roller is supported on a pin bearing in a bracket on the other end of which there is a screw with a nut to raise and lower it. A chain secures the pin and roller to the bracket.

When lashed cable is repaired the lashing wire has to be removed near the work. The pin and center roller of the slack puller are then taken out and the nut is run out to the end of the lifting screw. With the puller in position and the two outer rollers against the strand, the center roller is replaced and its pin inserted. Play in the screw is removed by tightening the nut with the fingers; then the strand is deflected by applying a lineman's wrench to the screw. Tests indicate that a two-inch deflection of the strand provides sufficient working space.

Koiled Kords, Inc. Production At Whitney Blake

The Whitney Blake Company of New Haven, Connecticut is now teamed with the West Coast interests of Ralph Collins and Charles F. Mason, in the ownership of Koiled Kords, Inc., successor to Cordage, Inc., according to an announcement made recently by John Brown Cook, president of the new company.

It was further announced that telephone retractile cords will be distributed by the leading telephone manufacturers and by the Graybar Electric Company. Graybar has been appointed exclusive distributor of Koiled Kords of all types.

According to Mr. Cook, who is also president of Whitney Blake and Reliable Electric Company, Chicago, the new arrangement will effect immediate economies in manufacturing and in sales distribution. All manufacturing operations are now being performed at the Whitney Blake factory in New Haven which is equipped with completely modern machinery and laboratory facilities.

Sales activities of Koiled Kords, Inc., are directed by Col. E. L. Love, formerly in charge of Koiled Kords, Division of Kellogg Switchboard Company, Chicago. Management and development of the product, that has an extensive range of uses in the appliance and industrial, as well as communications fields, will be directed by the following men of long experience in the manufacturing and sales of communication equipment: Charles Mason, chairman of the board, (chairman of the Board of Associated Telephone Company, Ltd.), John Brown Cook, president, (president of Whitney Blake and Reliable Electric Company), John H. Ingmanson, executive vice-president, (vice-president Whitney Blake Company), R. D. Collins, vice-president, (executive, Associated Telephone Company, Ltd.), and Basil Hostage, secretary and treasurer, (treasurer, Whitney Blake Company).

Koiled Kords are patented, retractile cords which will not tangle or interfere with the use of telephones and radio handsets or microphones to which they are attached. These cords are spring-shaped and will extend to six times their retracted length, thus providing a safe, convenient means of connection between the apparatus and the moving element. Koiled Kords are standard equipment with most leading manufacturers of mobile radio equipment.

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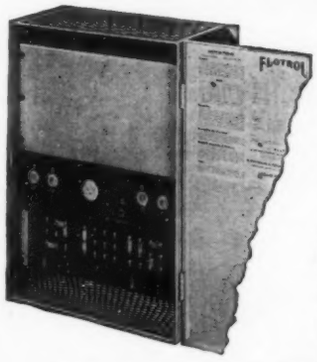
THE IDEAL BATTERY CHARGER

FOR ALL APPLICATIONS REQUIRING A DEPENDABLE SOURCE OF CONSTANT VOLTAGE DIRECT CURRENT



FLOTROL DOES EVERYTHING WITH 3 SIMPLE ELEMENTS AND NO MOVING OR EXPENDABLE PARTS

IT...

Compensates for variations in input voltage • Compensates for variation in loads • Delivers constant voltage to battery • Is entirely automatic • Is self-protecting on overloads • Delivers constant trickle charge at all times • Artificially cools rectifiers without moving parts.

The dual range FLOTROL chargers provide for operation on any one of five different input voltage ranges: 95-115V., 105-125V., 190-230 V., 200-240 V., and 210-250 V.

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You'll do it too because Sub-cycle is noted for its dependable service in producing a powerful ringing current — delivering years of trouble-free service. Sub-cycle has won the distinction of being the . . .

CHOICE of the Telephone Industry

. . . and the Telephone Industry demands efficiency under the severest operating conditions. Sub-Cycle is successfully used by Railroads — Power Companies — Private Industry — Fire Alarm Systems — Telegraph Companies — Pipe Line Systems.

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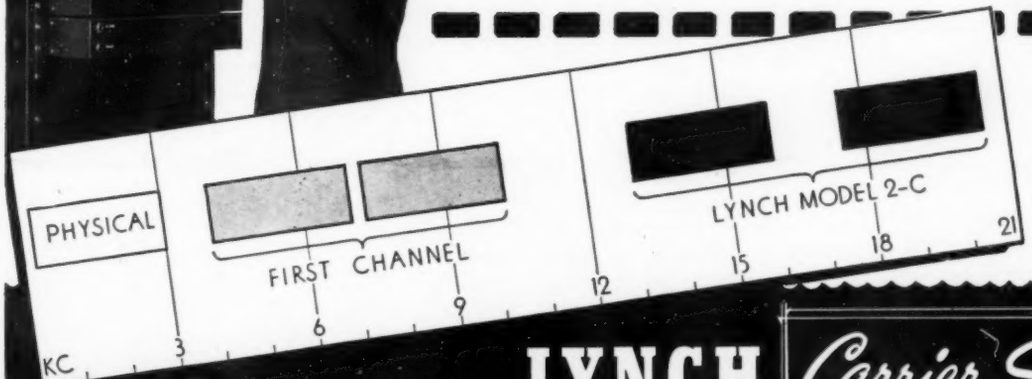
How to add a second Carrier Channel

to your existing single channel

Need an additional voice channel? It's an easy and economical job to install the Lynch Model 2-C Carrier Circuit. Model 2-C is adaptable to any type first channel and is properly filtered to make cross-talk unimportant. Operates 150 to 200 miles over copper wire. Lynch Repeaters may be added to extend this distance almost indefinitely. Minimum upkeep . . . each terminal contains only five standard-make tubes.



Write for interestingly low prices.

• • •

Be sure to send complete technical data of existing circuit.

Operates on standard dial or ring-down basis.

LYNCH *Carrier Systems*

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NEW PRODUCTS SHOWCASE

Just place the material on the filming window and touch one button—that's all the operator does when microfilming with the new "Micro-Record" all-purpose automatic microfilm machine.

New All-Purpose "Micro-Record" Microfilms Bulky Papers

Single sheets, magazine articles, pages in bound volumes, sheets of correspondence stapled together labels on bulky packages—all can be rapidly and economically microfilmed by the new "Micro-Record" all-purpose automatic microfilm machine developed by Griscombe Corp. Extreme simplicity is combined with this exceptional versatility, as the operator need only place the material to be microfilmed on a glass window and touch a single button.

Designed especially to accommodate nearly all forms of records common in modern business practice, the "Micro-Record" combines versatility and simplicity with ease of operation. Any material, no matter how bulky, which can be placed on the 9¼" x 14" glass window can be microfilmed. The machine is foolproof because of its fixed focus, fixed aperture, and fixed illumination. Absolutely no knowledge of photography is required. Records can be micro-filmed as fast as the operator can place them on the window and touch the button. Up to 45 exposures a minute can be made.

At a cost of 1/5 to 1/25 cent per item, 1400 to 8000 records can be made on a 100-ft. spool of economical 16-mm. non-perforated film, which can be filed in a space only 4" x 4" x 1". Economy is further promoted by use of ordinary 60-watt bulbs for illumination. Reloading the camera, in daylight, is simpler than replacing a typewriter ribbon.

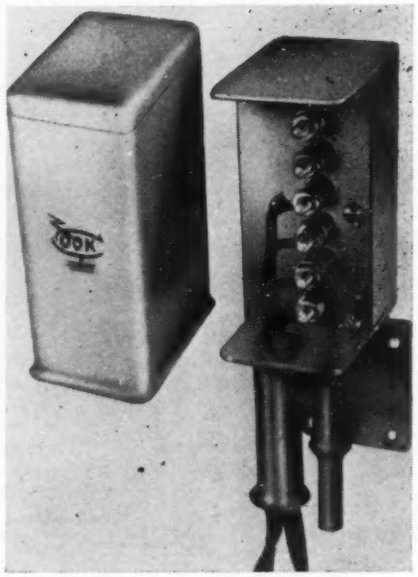
The "Micro-Record" occupies a space only 27" x 30" and stands 30" high. It uses only 275 watts, and operates on any 110 to 125 volt A. C. circuit. For detailed information write your New Products Editor.

◆

Cook Electric Announces New 3-Pair XB Terminal

Anticipating a growing demand for a better and more economical means of subscriber distribution out of rural cable, the Cook Electric Company has developed a new 3-pair XB Terminal—an addition to the well known XB family of unprotected terminals. This development was initiated by the Intra-State Telephone Company, Galesburg, Illinois.

It is claimed the use of the terminals on rural cable routes makes it possible for the operating company to reduce the length of subscriber drops and eliminates bracket lines. In order to give the best type of telephone service on these longer rural cable routes, especially where automatic operation is in use, line resistance and current leakage must be reduced to a minimum. This is especially so on large multi-party lines. The 3-pair XB Terminal was especially designed to meet these conditions. Cook Engineers gave primary consideration to the problem of reducing to a minimum all factors that would cause high resistance and the possibility of line leakage and maintenance. This led to such advanced features as the heavy, close-fitting



Cook Electric Company's new 3-pair XB terminal.

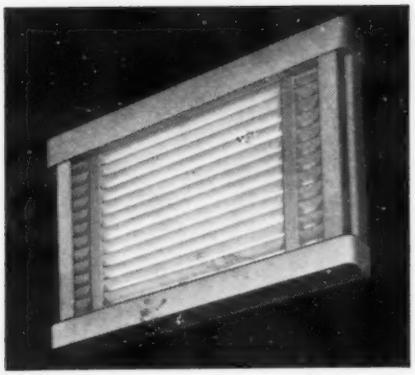
welded zinc cover, the non-corrosive Monel face plate on which are mounted the highly insulated cable studs; the use of the flanged tube as an entrance for drop wires. This tube can be completely sealed after the drop wires are installed.

The new Cook Terminal measures 7½ inches high, 3¾ inches deep and 2½ inches wide. It is furnished with or without cable stub, to user's specification.

◆

Fluorescent Light Simulates Sunlight

Designed to simulate window sunlight, Wind-O-Lite, manufactured by Continental Electric Co. and distrib-



"Wind-O-Lite" fluorescent unit simulates sunlight.

uted by Thunder & Associates, is a new idea in fluorescent illumination. The device uses cold cathode tubes behind a steel venetian blind; the desired amount of light can be obtained by merely adjusting blind openings. The unit fits flat against the wall and can be installed permanently, if desired. Steel slats snap out for cleaning.

The manufacturer states that the light tubes have a life expectancy of 10,000 hours. Wind-O-Lite is adaptable to both home and industrial use. For complete information write New Products Editor, Telephone Engineer Publications.

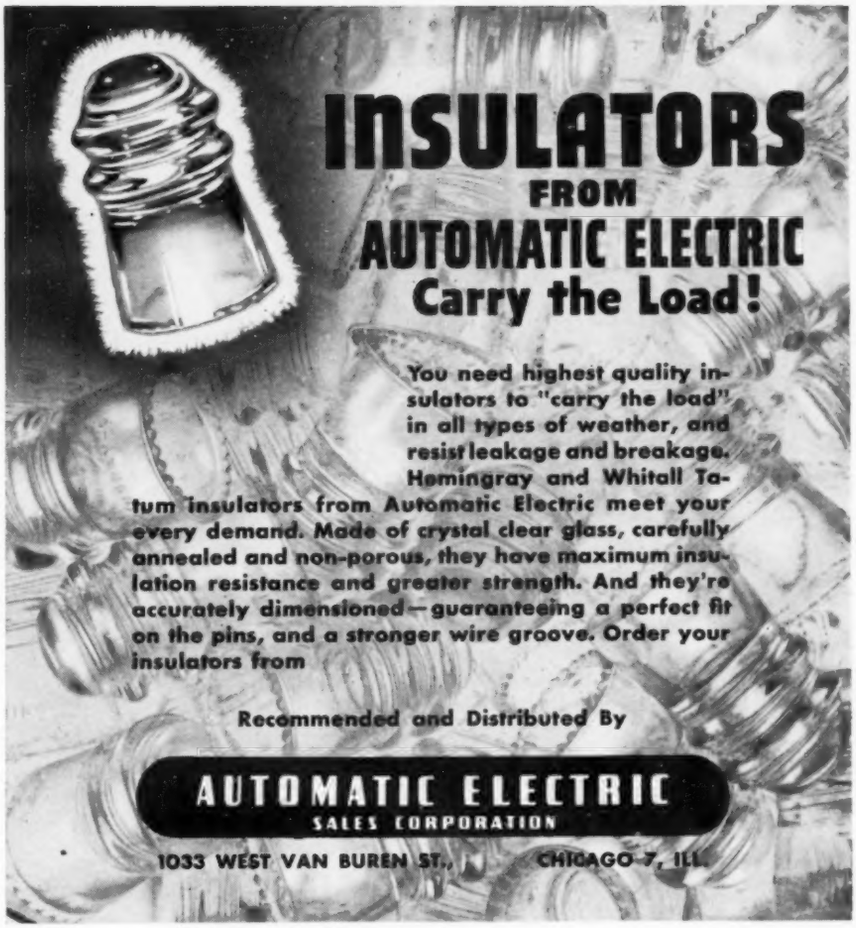
◆

Dillon Offers Free "Computer" to Engineers

W. H. Dillon & Co., Inc., Chicago, have announced a new and free service to engineers in every field where materials must be physically tested.

In announcing the service Robert E. Dillon president, said, "Since the earliest days of Material Testing, engineers have had to make calculations for each size and type of specimen. As a first step in lessening that work, Dillon engineers compiled a lengthy chart of numerous pages. That helped, but now we have devised a hand-size Computer, with all this data at fingertip view. Instead of calculating the specimen cross-sectional area, then multiplying this area times the PSI to get breaking strength as one example, now engineers need only set the Computer at specimen size, then read the breaking strength opposite the PSI! They can find area, or the PSI in a second.

With this new tool, it is claimed the engineer can ascertain PSI, or how big to make the specimen, or what load he will need. Knowing any two factors, the third factor is a ready answer. This newly created Computer will be a time saver for early material planning and testing procedures. It covers **rectangular** speci-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Carry the Load!
You need highest quality insulators to "carry the load" in all types of weather, and resist leakage and breakage. Hemingray and Whitall Tatum insulators from Automatic Electric meet your every demand. Made of crystal clear glass, carefully annealed and non-porous, they have maximum insulation resistance and greater strength. And they're accurately dimensioned—guaranteeing a perfect fit on the pins, and a stronger wire groove. Order your insulators from
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When You Use KEARNEY LAY-CIT CABLE GRIP

Lay-Cit Cable Grip is a neat compact grip that is easily and conveniently installed. Linemen can either take up or let out slack, by simply spreading the plates and adjusting the lacing.

They do not mar the insulation, and can be used over and over. Available in two sizes to handle cables from ⅜ to 1⅛ inch.

Now ready for IMMEDIATE DELIVERY. For complete information and prices see your regular jobber or write —

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Overhead and Underground Utility Equipment

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mens from 1/32" to ¼" thick by ½" 1½" wide, from 0 to 150,000 lbs. PSI; the reverse side of the Computer covers rounds from 1/16" to 1" diameter, up to 100,000 lbs. PSI. The Dillon Computer is not offered for sale, but may be had without cost, by engineers submitting their full name, company, and position. Professors in high school and college may likewise obtain free Computers, by addressing, W. C. Dillon & Co., Inc., 5410 W. Harrison, Chicago 44, Ill.

◆

J. W. Channell Holds Splicing Demonstration

A splicing demonstration was held June 21, 1947, at the residence of J. W. Channell, 2415 Roanoke Road, San Marino, California. The latest type of tools and material were shown, including 11 different models of splicing machines, dating from 1923 to 1947.

The feature attraction was the completion of a new unit type 455 pair, 19 gauge splice in 4 hours and 46 minutes. Work was started at 8 A.M. The sheath was removed, cable boiled out, tinned sleeve and wiping discs placed, 455 pairs spliced, dessicant placed, splice wrapped, sleeve placed and beat in, joints wiped, cable racked and debris cleaned up, completing the job at 12:46 P.M. The new type "M" model all gauge splicing machine was used in making this test splice. It is not necessary to solder splices made with this machine.

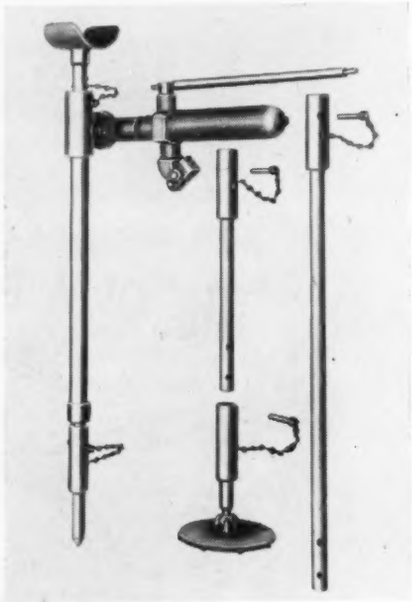
The method of repairing broken binding posts in 14-type terminals with the Channell mercury injector also was demonstrated. This method saves the change of line assignments and the replacement of terminals. Among the items displayed were: The first machine for cutting and punching cotton sleeves; the method of casting joints including tinned lead sleeves and discs, and the latest type of furnace, pot hook, and cable splicing supports.

The Channell strand terminal also was demonstrated. The important features of this terminal are the absence of a stub or tail, the simple method of attaching terminal to strand, the absence of wiped joints, and the means of increasing the size without removing it from the cable. The demonstration ended with the showing of a motion picture, "Splicing With The Channell "K" Model Splicing Tool."

◆

New, Hydraulic Cable Racking Jack

A new "Associated" Hydraulic jack for racking cable has been developed by Associated Foundries & Manufacturers, Inc., 555 West 54th Street, New York 19, N. Y. in close cooperation with a leading telephone Company in New York City.



New hydraulic cable racking jack.

This jack marked "HYDRO JACK" Type 2251, has a capacity of 1 ton and can be extended from a minimum 30" to 80" by including the 12" and 24" extensions. Accessories include one straight shoe, one stake base, one flat swivel base 5" dia., two aforementioned extensions and the hydraulic unit consisting of a pump with container pivoting 360° about the hydraulic cylinder so that the jack can be used in any position. Quick coupling of all accessories is effected by means of removable pins attached by sash chains to the parts. The complete net weight of the jack with accessories is 19 lbs. 3 oz. Special accessories can be made to specifications.

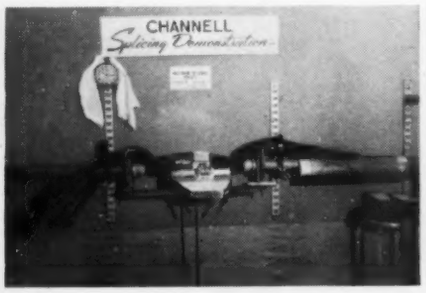
For complete information write, New Products Editor, Telephone Engineer Publications.

◆

L & R Introduces Improved Small Parts Cleaning Machine

Now equipped with its own specially designed motor made by L & R in its own plant, the Industrial Precision Cleaning Machine is again offered by the L & R Manufacturing Company of Arlington, New Jersey, for the processing of instruments and small metal parts too difficult to handle manually or in any other type of equipment.

With liberal use of ball bearings in the motor and in the new shaft that supports the work basket, it is claimed the equipment is engineered for long life and smooth, trouble-free operation. The work basket measures 3⅜" deep x 5½" in diameter into which the triple nesting baskets fit so that three sets of parts can be cleaned at one time without the danger of their becoming mixed. The unit is also furnished with controlled reversing action which adds materially to the machine's efficiency. Aluminum cups under the jars are said to assure more protection for the pyrex containers and perfect alignment with the basket. The unit is completely self-contained and cleans, rinses, pol-



Channel splicing demonstration started at 8 a.m. Photographs left to right show cable after sheath has been removed, splice about one-half complete, and completed splice.

L & R Small Parts Cleaner

ishes and dries parts which are too delicate for manual handling or for processing in other types of equipment. Sections of the triple baskets can be sent to various departments to prevent contamination of the parts before they are assembled.

For full information, write to the New Products Editor, Telephone Engineer Publications.

◆

Extra Length Carbide Masonry Drills

Extra length, carbide tipped masonry drills for use in deep hole drilling of non-metallic materials, have been standardized by Super Tool Company, 21650 Hoover Road, Detroit, Michigan.

Drills up to 1-½" in diameter and 20" in length can now be supplied "off-

Carbide-tipped masonry drill

GraybaR

TELEPHONE SUPPLIES

BULLETIN

Whitney Blake TELEPHONE WIRE

When you want drop wire, bridle wire, or inside, jumper, or duct wire, there just isn't any point in using anything but Whitney Blake. For this line — made of top-quality materials, including Teleprene and Plastite insulations — really has "been through the mill" of laboratory and field tests . . . and has come through with superior ratings in all characteristics!

W-B wire is one of the hundreds of telephone supplies which Graybar distributes. They're *all* first-quality products of leading manufacturers.

Whatever your supply requirements, the easiest way to get them is to call our nearest office. A Graybar specialist can be of real help in solving any of your electrical problems. *Graybar Electric Company. Executive offices: Graybar Building, New York 17, N. Y.*

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EVERYTHING IN TELEPHONE SUPPLIES via GraybaR

IN OVER 90 PRINCIPAL CITIES

WANT YOUR ORDER FILLED BY OUR STOCKHOLDERS?

Whenever you order anything electrical from Graybar, your requirements *do* receive the personal attention of our stockholders. Graybar is wholly owned by its operating and retired personnel. That's one reason why Graybar people — together forming a huge, nation-wide organization — apply to each job the sense of personal responsibility you associate with a small, well run, *local* business.

the-shelf", according to the announcement made by H. E. Berry, sales manager of the company.

Heretofore, it has been necessary to produce such masonry drills as special tools on special shop orders. Standardization by Super not only means that users can obtain immediate delivery from stock but at much more favorable prices.

Mr. Berry also points out that the extra length drills are fluted for chip clearance and heat dissipation the same as their regular lengths—a feature that has been proven necessary in this type of tool.

Price lists may be had by addressing Telephone Engineer's New Products Editor.

◆

Automatic Leveling Ladder Base Now in Production

The Shur-Foot automatic leveler and locking base for ladders has just been announced by the Akron Steel and Sales, Inc., Akron, Ohio.

The unit consists of an aluminum truss that automatically levels the ladder laterally on a half-circle of strong steel pipe. Carborundum abrasive shoes, on ball and socket joints, assure a firm grip on any surface.

According to J. Norman Garrett, sales manager of the Akron company,

Automatic Leveling Ladder.

the Shur-Foot base requires no adjustment by the workman but instantly and automatically adjusts itself to the ground level and surface under either foot, levels the ladder and is automatically locked in place by the weight of the ladder. When the ladder weight is lifted in moving to a new position, Shur-Foot is automatically unlocked for leveling at the new location.

The base is available for immediate shipment and is furnished in four sizes —to accommodate ladder widths from 16″ to 24″. For further information write TELEPHONE ENGINEER & MANAGEMENT'S New Products Editor.

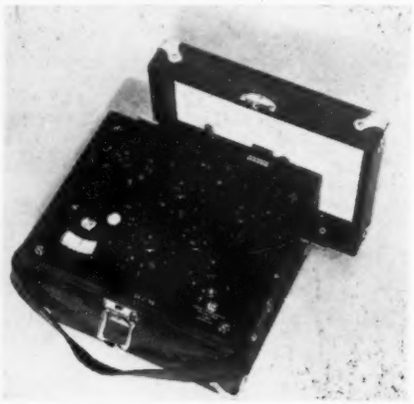
◆

Leeds & Northrup Makes Type "U" Test Set Available

The popular Leeds & Northrup Type "U" Test Set, unobtainable during the war for civilian use because of the heavy demands of the armed forces, is once more available and being delivered to telephone and telegraph companies.

Especially designed for quick, accurate use by linemen and troubleshooters, the Type U Test Set is a portable Wheatstone bridge of outstanding flexibility. A single switch changes the measuring circuit for Murray, Varley and Hilborn loop tests, or for straight resistance measurements. Ratio dial has multiplying values of 1/1000, 1/100, 1/10, 1/9, 1/4, 1/1, 10/1 and 100/1, also settings of M1000, M100 and M10 for Murray loop ratios.

Self-contained pointer galvanometer has a sensitivity of one microampere



Type U Leeds & Northrup Test Set

per division. The internal battery consists of three standard flashlight cells. When required, external battery and galvanometer can be readily connected to binding posts. Complete directions for making the various loop tests, identifying faulty wires, locating opens and measuring resistance are attached to the inside of the cover. The instrument weight, in its case and ready to carry, is only eight pounds.

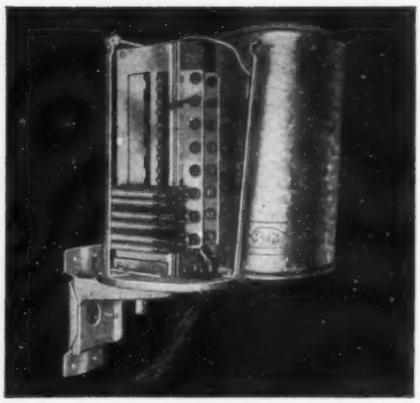
NEW PRODUCT INFORMATION

To receive additional information on any of the new products reviewed in this section write NEW PRODUCTS Editor, Telephone Engineer Publications.

STROMBERG—

cook type S-20

pole cable terminal



Can be used as a protected or unprotected terminal. Made in 6, 11, 16, or 26 pair capacity.

Cook Type S-20 Pole Cable Terminals are carefully engineered to offer the user:

MAXIMUM ECONOMY—because Cook Type H 20 Protector Units, containing fuses and primary and secondary lightning arresters, are added only as they are required.

MAXIMUM CONVENIENCE for installation and servicing. Drop wire connections are at front. Drops are led through individual insulating knockout holes. Self-soldering nozzle lies close to pole. Hood locks in raised position for working. Separate mounting bracket eliminates gaining of pole and provides easy installation.

MAXIMUM PERFORMANCE when used separately or as part of the Cook Trans-Mount System of Protection and Distribution. S-20 is of all steel construction, hot galvanized. Complete terminal designed for maximum insulation.

STROMBERG—

BRANCH OFFICES: CHICAGO

RG—CARLSON Recommends

you take no "chances" with

_____ chance safety cable cars!

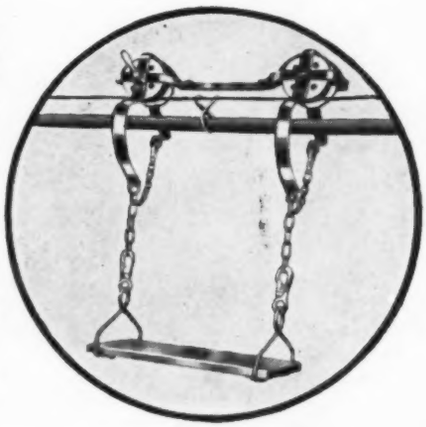
Featuring safety, service, and convenience, Chance Cable Cars have consistently proven themselves the finest cable cars on the market. Chance Cars are available in either rigid or flexible design.

Rigid Cars have cold rolled steel frames, steel channels braced with steel straps.

The Flexible Car (illustrated) uses welded steel chain and can be collapsed, strapped or tied for convenient transportation.

All Chance Cars are equipped with convenient hand brake, and can be furnished with or without wheel guards.

Specify "Chance" . . . the finest investment you can make in Safety Cable Cars.



armstrong's glass insulators

are harder to see . . . harder to break!

No. 1 "DP" "Double Petticoat" insulator thread construction makes pin fit snugly.

These crystal-clear glass insulators reduce malicious breakage to a minimum. Melting into the sky background, they offer hard pickings for amateur sharpshooters.

For more than 24 years Armstrong's Glass Insulators have stood ruggedly against every kind of assault. Extremes of cold and heat do not affect them. Even direct transverse strains prove them *stronger than their supporting pins.*

Back of their precision-engineered, automatic manufacture stand years of laboratory research. Because of this uncompromising devotion to quality, Armstrong's Glass Insulators are today specified by leading communication systems of America.

CONFORM TO—OR EXCEED—ASTM STANDARDS

Replace Operator's Batteries with long life

electrox battery eliminator

Type PA-05004

Plugged into your light circuit, the PA-05004 will deliver a constant, humless direct current to the operator's circuit on magneto switchboard. In case of power failure, Power-off Relay automatically transfers operator's circuit to stand-by dry cells.

Other Electrox models are available for Lamp Signal (PBX), and Automatic (PAX) Systems. Capacities of 0.5 to 6 amps, from 12 to 48 volts.

MADE BY THE ELECTROX DIVISION, SCHAUER MACHINE CO.

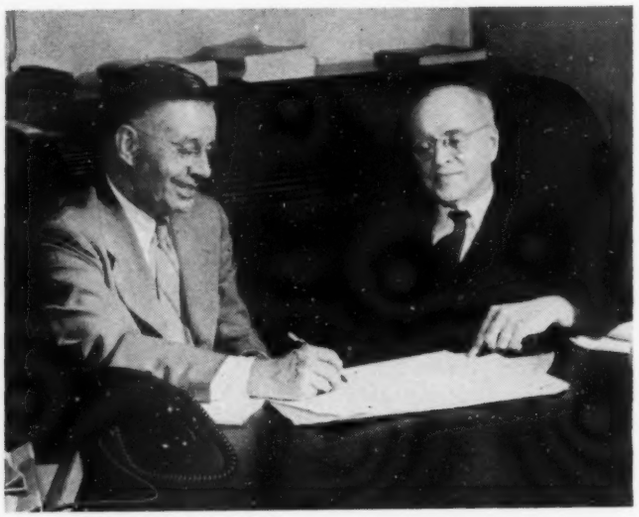
RG-CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

CAGO 6 ANSAS CITY 8. SAN FRANCISCO 3: IN CANADA: STROMBERG-CARLSON COMPANY LTD. TORONTO

STROMBERG Telephone CARLSON

TELE-VIEWS

To provide added space Associated Telephone Co., Ltd., Santa Monica, Calif., has added 2½ stories on the original three-story general office building.



Harvey H. Stanley (right), chief installer for the Kellogg Switchboard & Supply Company, Chicago, turns over his duties to R. M. Scofield, his assistant at Kellogg for the last five years.

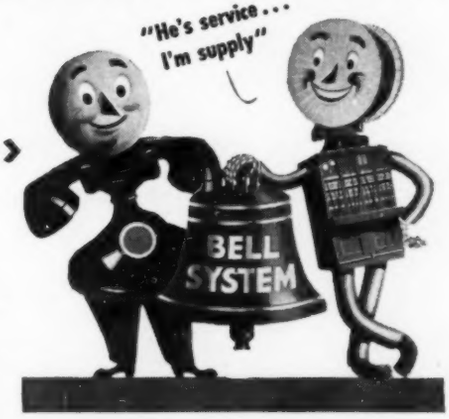
Al M. Wilkins has returned to telephone industry as sales manager of Telephone Repair & Supply Co., Chicago.

Mrs. M. Bickley, manager and chief operator of newly organized Gray Court Telephone Co., Chapin, S. C.

Paul V. Galvin, (left) pres. of Motorola, Inc., watches as D. E. Noble, v. p. receives War Department Certificate of Appreciation from Col. Frank Kidwell.

Rear view of Gray Court Telephone Co.'s new central office in Chapin, S. C. Company recently took over Mutual Telephone Co.'s lines.

Putting a telephone in for you ...a sample of teamwork by these two ››



Western Electric has always been an integral part of your Bell Telephone service—helping to make it the world's best at the lowest possible cost.

Installing *one* telephone is a fairly simple job.

But making it possible for the Bell System to install telephones at a rate averaging 25 a minute every working day, calls for a lot of skillful teamwork by Western Electric—supply member of the Bell Telephone team.

Western Electric manufactures the telephones, wire and other equipment—buys the installers' supplies and tools—delivers all these things where and when needed throughout the nation.

That's just a *small* sample of teamwork by Western Electric.

Teamwork on a *vast* scale goes into manufacturing, purchasing and distributing all kinds of telephone equipment and supplies and installing central office switchboards.

MANUFACTURER... of 43,000 varieties of telephone apparatus.

PURCHASER... of supplies of all kinds for telephone companies.

DISTRIBUTOR... of telephone apparatus and supplies.

INSTALLER... of telephone central office equipment.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

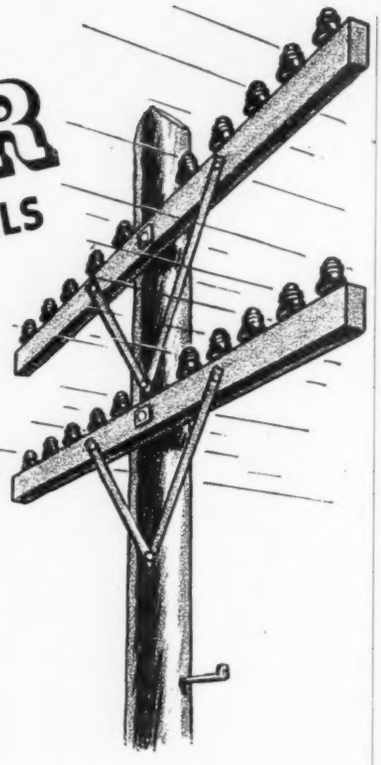
It's

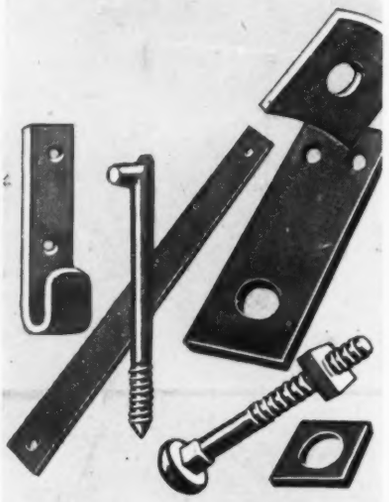
OLIVER

POLE LINE MATERIALS

for

STAYING POWER THAT PAYS





OLIVER
PRODUCTS INCLUDE

ANCHOR and GROUND RODS
BOLTS BRACES
HOUSE and POLE BRACKETS
TRANSPOSITION BRACKETS
CABLE GUARDS and STRAPS
CABLE SUSPENSION CLAMPS
GUY WIRE PROTECTORS
LAG SCREWS POLE STEPS
STEEL PINS
WASHERS (Round and Square)

—and other Hardware for Telephone Line Construction

Telephone men want hardware they can depend on . . . hardware that cuts down on replacement costs . . . saves on labor and labor costs . . . stresses quality and staying power.

No wonder so many linemen are "lining up" with Oliver products in the construction of new lines or for the replacement of old line hardware. Oliver quality goes all the way to keep service uninterrupted.

For staying power that pays, "Line Up" with Oliver hardware now.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS

Do You

BY RICHARD ALLEN

In a typical city the highest point of the traffic curve is reached in the morning between 9 and 11 o'clock. That is when business gets into full swing and telephone switchboards in the business sections of the city are handling the maximum load. The volume of calling then drops gradually until the lunch hour, usually between 12 and 1 o'clock, then rises again to reach another peak, not as high as in the morning, between 4 and 5 o'clock.

★

About two and one-half million questions are answered during a normal day by 12,000 Bell Telephone System "Information" operators, although many of the answers are easily available to the callers because they are in their telephone directories.

★

More than twice as many radiotelephone circuits are operating today to overseas areas than in 1939, when the service was interrupted by war.

★

Most telephone users take good service for granted and have no idea of the organized effort necessary to produce it. On the economic side, transcontinental calls which used to cost $20.70 are now put through for $2.50. Whether this downward trend in charges for service can survive the present upward trend of costs is problematical.

ou Know?

ILLUSTRATED BY PAULSON

The latest available figures indicate that the U. S. A. now has one telephone for every five men, women or children in the land, or 58 per cent of the world's total. Sweden comes next with a one-to-six ratio; but Russia has only one telephone for every 125 inhabitants.

★

The Bell of Pennsylvania is the first telephone company to receive a grant from the Federal Communications Commission to own, install and maintain the equipment for an industrial radio system. King Farms of Morrisville, Pa., for which the service will be provided, will operate a land station and 11 mobile units to expedite planting, cultivating, harvesting and marketing on its 6,000-acre truck farm.

★

According to the Bureau of Census figures, farm telephones increased 22.23 per cent in the period from 1940-45. In 1940 there were 1,526,905 telephones and at the end of 1945 there were 1,886,317.

★

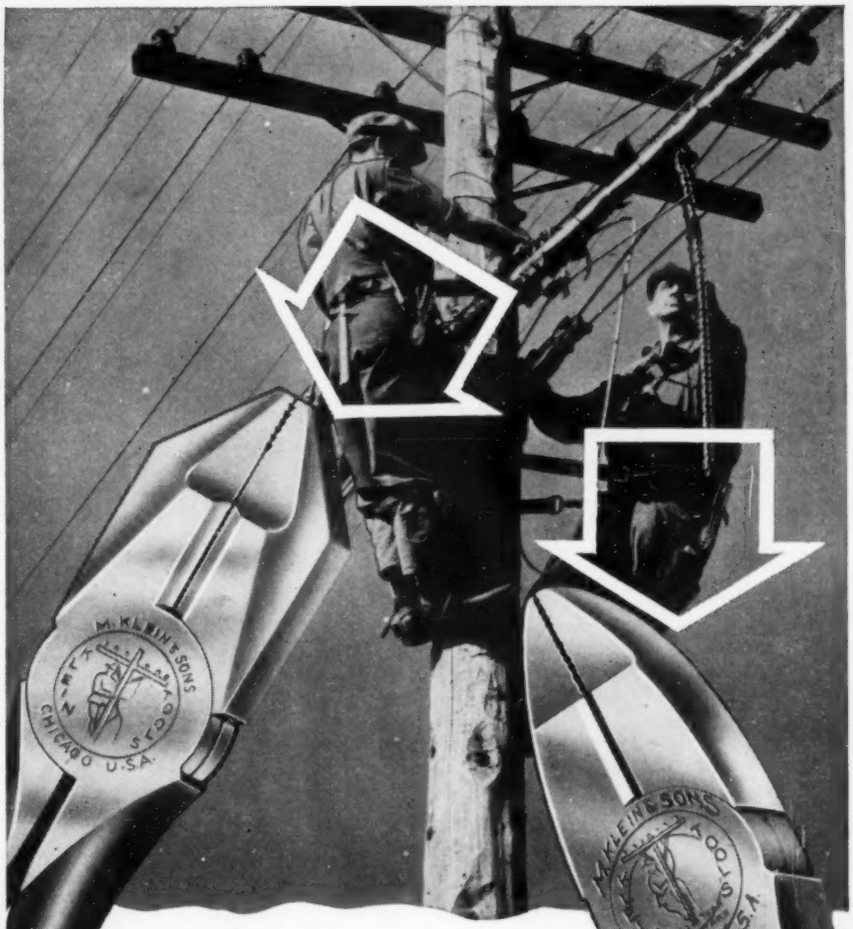
A Million Words A Minute is the transmission rate quoted by Niles Trammell, NBC president, in announcing a new radio communication system which will be ready for public showing this summer. Trammell says the system, known as ultrafax, "could transmit twenty 50,000 word novels from New York to San Francisco in only 60 seconds."

★

Bell Systems coaxial cable between New York and Washington was used 188 times during 1946 to transmit television programs totalling more than 500 hours.

★

One hundred Ethiopian communication workers have built a 290 mile, 2-circuit line between Addis Ababa and Dire Dawa.



Linemen are Kleinmen

• Over the years the men who string and maintain the nation's power and communication lines have come to know and rely on Klein Pliers. That's why you will find Klein Pliers in the hands of the man on the pole—why linemen are Kleinmen.

And there's good reason back of this preference for these quality tools. Drop forged from fine alloy steel, each pair individually tempered and tested, Kleins have just the proper balance . . . just the right spring to the handles to minimize hand fatigue. A fitted hinge keeps jaws perfectly aligned . . . carefully matched knives stay keen.

Keep Klein Pliers on order—your supplier will meet your requirements as soon as possible.

Ask Your Supplier

***Foreign Distributor:* International Standard Electric Corp., New York**

A copy of the Klein Pocket Tool Guide, showing the Klein line and containing valuable tool information, will be sent on request.

Since 1857

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
3200 BELMONT AVENUE, CHICAGO 18, ILLINOIS

GOOD NEIGHBOR POLICY

Most telephone men and women live in the communities they serve. Telephone offices are run like local businesses.

The advertisement on the opposite page tells these facts to telephone users. Appearing in national magazines during August, it helps explain why the telephone industry is not only a good public servant but also a good neighbor.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

Home Town Folks

Wherever there is a Bell telephone office, you will find it operated and managed mostly by home town people.

For the Bell System is made up of many hundreds of local units, each serving its own community. So the telephone company isn't something big and far away but close to your home and your interests.

This means compact, efficient operation and it also helps to keep a friendliness and a neighborliness in the conduct of the telephone business.

The Bell telephone people in your community aim to be good citizens in all things, in addition to giving you good and economical telephone service.

BELL TELEPHONE SYSTEM

R. A. Phillips Named President Central Telephone Co.

At a recent meeting of the board of directors of Central Telephone Compa, R. A. Phillips, formerly vice president and general manager of the company, was elected president and general manager to succeed Max McGraw, who was appointed to the newly created office of chairman of the board.

Central Telephone Company is the principal telephone subsidiary owned by Central Electric & Gas Company, whose telephone system is made up of the following companies: Central Telephone Company, Virginia Telephone & Telegraph Company, Middle States Telephone Company of Illinois, La Crosse Telephone Corporation, Illinois Northwestern Telephone Company, The Bluefield Telephone Company and Southeastern Telephone Company.

This telephone system serves about 140,000 telephones, including service to such communities as Tallahassee, Florida; Charlottesville, Virginia; La Crosse, Wisconsin; Pekin and Park Ridge, Illinois, and others, totaling 177 exchanges.

Mr. Phillips has been connected with the group of companies since 1928. Born in Millom, England April 12, 1905, he moved with his family to the United States soon thereafter, where the family settled in New York State. After completing high school work at Norwood, New York, Mr. Phillips attended the University of Michigan at Ann Arbor, graduating with an A. B. degree in Business Administration in 1927. His parents presently reside in Angola, New York.

R. A. Phillips

After completing his schooling, Mr. Phillips became associated with Allen R. Smart & Company, public accountants of Chicago, Illinois. As a result of a survey and report that his firm made of the Central Electric & Gas Company in 1928, Mr. Phillips was invited to, and accepted, the position of assistant general auditor of that company, thus making his entrance into the utility and telephone operating field. In 1932 he was named assistant to the president, and in 1936 was elected vice president and general manager of his group of companies.

Mr. Phillips has always shown a keen interest for, and been active in Independent Telephone Association and other industry activities. He served as president of the United States Independent Telephone Association during 1941-42, and is presently serving on the Executive Committee, Toll Compensation Committee and Rural Telephone Service Committee.

In addition to several terms as a member of the Board of Directors of the Iowa Telephone Association, he served that group as president during 1941. During the war years he was active in industry problems in Washington, including his service as a member of the Industry Advisory Committee to the Board of War Com-

MEREDUC
TRADE MARK

PRESSURE TREATMENTS of Southern Pine Poles, Crossarms, Conduit, Cover Plank, Ground Wire Moulding with No. 1 Creosote Oil or Pentachlorphenol are carried in stock permitting prompt shipments of carload and less than carload orders. Mailing address: P. O. Station "A", Atlanta, Ga.

WILLIAM C. MEREDITH COMPANY, Inc.

Treating Plant: East Point, Ga. — Mailing Address: P. O. Station "A", Atlanta, Ga.

munications; the Industry Advisory Committee of the War Production Board, and also as a member of the National War Labor Board Telephone Commission.

The electric utility industry recently recognized Mr. Phillips' efforts and abilities in his chosen field by selecting him as President of the North Central Electric Association, which represents interests of the electric companies in the north central states.

In addition to serving as president and general manager of the Central Telephone Company and various other subsidiary telephone companies, Mr. Phillips continues as vice president and general manager of the Central Electric & Gas Company, which owns Central Telephone Company, and owns and operates electric and gas properties in the states of Nebraska and South Dakota. This includes electric or gas service to 72 communities of which Lincoln, Nebraska and Sioux Falls, South Dakota are the largest.

◆

Illinois Bell Reports Second Quarter Loss

Illinois Bell reported an operating loss of $1,333,324, for the second quarter of 1947 after interest deductions. This represents a loss of 68c per share of stock outstanding, which is the lowest quarterly return in the history of the company. This compares with a net income of $1.76 per share for the second quarter of 1946.

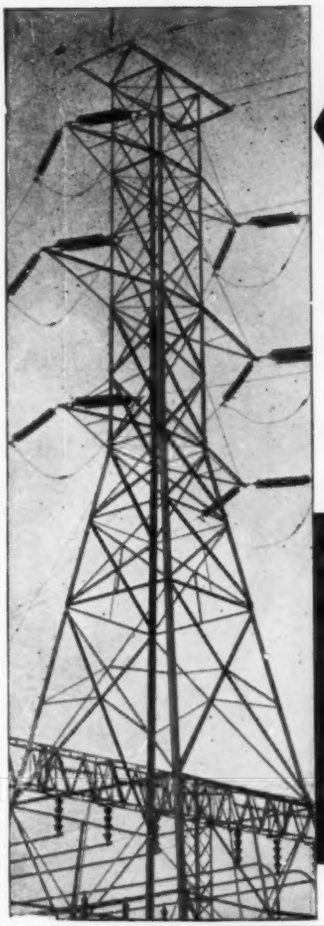
Although operating revenues for the 12 month period ending June 30, 1947, increased $11,734,493, or 7.9% over the preceding 12 months, operating expenses, before taxes, increased $22,583,640 or 19.1%. A major portion of the increase in expenses during this period resulted from general wage increases granted in March, 1946, and in the second quarter of 1947.

In view of this operating loss the Board of Directors recently voted to omit any second quarter dividend payment.

◆

Mutual Tel. of Hawaii Advances Roger Pierce

Promotion of Roger J. Pierce to the position of manager of radiocommunications of the Mutual Telephone Company of Hawaii in general charge of the radiotelephone and radiotelegraph operations and radio engineering work has been announced by J. B. Atherton, vice president of the company.



Make Sure
LIGHT AND POWER WIRES WILL HOLD THE STRAIN

DILLON DYNAMOMETER

A multitude of Dillon Dynamometers are protecting communities and companies alike from failures caused by wires going down in severe storms. Standard for dependable accuracy, simplicity and convenience. Actual size 8¼" x 6¼" x 3". In wide use also in telephone and telegraph work for indication of tension in guy strands, messenger and wire. Many other uses where torque, weight, and overload are vital factors. Take out guesswork of "sight and sag". Hooked on in a jiffy, indicates tensions in seconds. Direct reading. Nine capacities, 500 to 20,000 lbs. There's a place for the Dillon in every Electrical Plant.

Send for illustrated Dynamometer Manual.

W. C. Dillon & Co., Inc.
5424 W. HARRISON ST. CHICAGO 44, ILL.

Count on KLEIN

OUT ON THE LINE

- Pliers and cutters
- Climbers and Belts
- Wire Grips
- Tool Bags

IN THE EXCHANGE

Klein Tools are work savers that aid your men to do better work . . . put jobs through faster . . . guard their safety. Easy on the budget, these quality tools cut down on tool expenses. The name "Klein" has stood for tops in quality and the finest in tools, ever since 1857. When you're buying new tools, be sure you get Klein.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILL.

Roundtable LINE and DESK Discussions

Edited By
J. S. REED, JR.

Q. We have been using extension fixtures on poles for a number of years to extend the drop wire span high enough above the highway it crosses so that the necessary clearance will result. In some cases, ice loads will cause a fixture to buckle. Can you recommend some way of preventing this trouble?

A. When placing a pole top extension fixture, we suggest that you attach the fixture as shown in Figure 1. If the fixture is so placed that the pull of the drop span is in one of the directions indicated in the inset in the illustration, the chance of the fixture buckling under ice loads will be greatly reduced. Also the drop wire should not be attached higher up the extension fixture than is necessary to obtain the desired clearance, thus reducing the leverage exerted on the fixture.

◆

Q. In installing or replacing poles in town, we sometimes have to break up the sidewalk to place the pole. What is the proper procedure to follow in restoring the damaged sidewalk?

A. To repair a sidewalk broken in installing or replacing a pole, first, cut away the sidewalk around the pole to leave six inches of space between the curb and the pole and four or five inches of space on the other three sides. Cut the sides as smoothly as possible with a mason's hammer or chisel and remove all broken material. After the pole is set and tamped in, mix four parts of clean sand to one part of quick-setting cement. Add only enough water to obtain a working consistency. Fill the space around the pole with the mixture and trowel to a smooth even finish.

◆

Q. We are in the process of rebuilding our rural leads and would like your opinion as to whether we should leave our anchors in the ground or take them out. If we have to remove the anchors, what would be the best way to do this?

A. Some companies advocate cutting the anchor rod off several inches below the ground level, salvaging only the more expensive anchors. It is our experience, however, that when an anchor is left buried in the right of way, there is danger that road grading equipment used by highway maintenance crews may be damaged by coming in contact with the buried rod. If this happens, the telephone company is held liable for such damage. To avoid this trouble, all unused anchors should be removed. The most satisfactory and economical method we know of is to use an earth borer or drill to bore down to the depth of the anchor and then pull out the anchors. Only a few minutes is required for this operation.

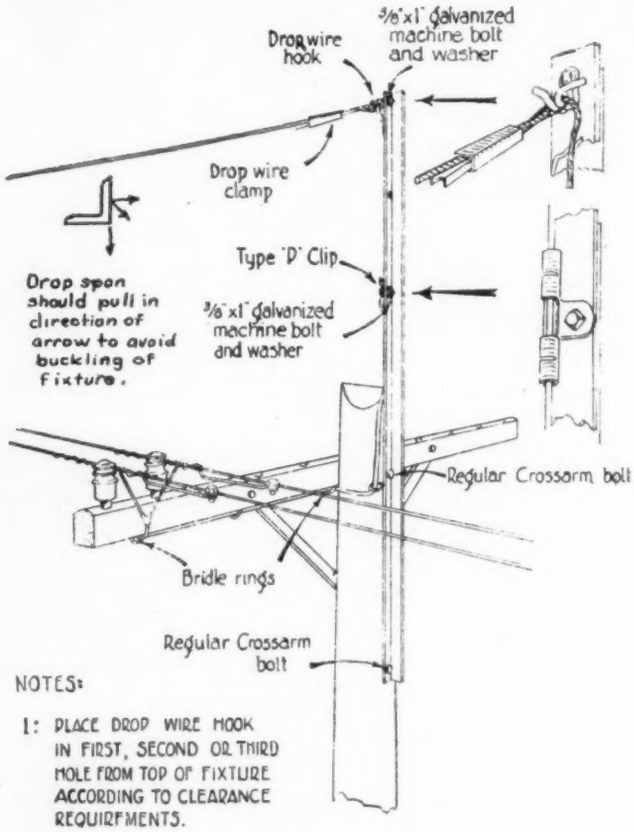
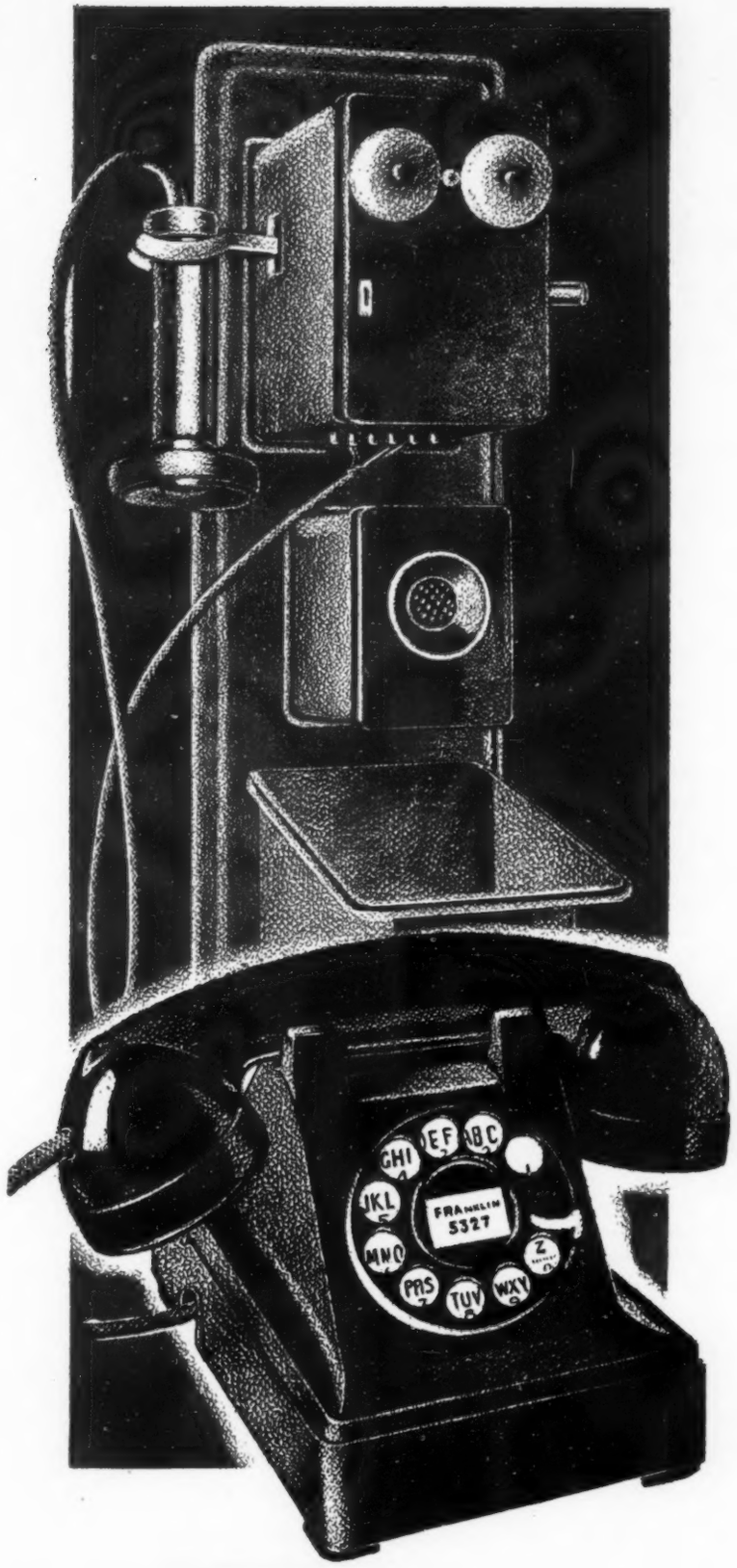

Drop wire hook
3/8"x1" galvanized machine bolt and washer
Drop wire clamp
Type "D" Clip
Drop span should pull in direction of arrow to avoid buckling of fixture.
3/8"x1" galvanized machine bolt and washer
Regular Crossarm bolt
Bridle rings
Regular Crossarm bolt
NOTES:
1: PLACE DROP WIRE HOOK IN FIRST, SECOND OR THIRD HOLE FROM TOP OF FIXTURE ACCORDING TO CLEARANCE REQUIRFMENTS.

Fig. 1 — Pole top extension fixture. Inset shows direction in which drop wire span should pull to minimize buckling of the fixture.

Free Help on Problems

IF YOU DON'T see a ready answer to your questions, let TELEPHONE ENGINEER'S staff of technical men tackle it for you. This is a free service. Your question and the resulting answer may not only solve your problem but help the many other telephone men reading these columns. Jot your questions on a postcard and look to LINE and DESK for reply.



It was good enough for GRANDPA...

Styles have changed in telephones and many other electrical devices, not always to obtain technical improvement, but simply because people find the new models more convenient or more pleasant to use.

The style is changing, too, in wood preservatives. Grandfather endured the stickiness, the odor, the irritation of treated wood because he had to, to get the needed protection. Today, you get positive assurance against rot and decay, against termites and other insects, and still have poles that can be comfortably climbed on a boiling hot day. Chapman "Penta" Preservative, containing pentachlorphenol, is clean, odorless, non-bleeding. The treated wood does not irritate the average human skin.

Chapman "Penta" Preservative costs no more than old fashioned preservatives. Its use involves no extra equipment or treating expense. Laboratory tests have proved, and actual field results have amply confirmed, that pentachlorphenol yields dependable, lasting protection, unsurpassed by any other commercially practical preservative material. Ask us — or ask your treating plant — for the interesting details.

CHAPMAN **CHAPMAN CHEMICAL COMPANY**

CHAPMAN "PENTA" PRESERVATIVE CONTAINS PENTACHLORPHENOL,
A PRODUCT OF THE DOW CHEMICAL COMPANY

TELEPHONE ENGINEER Handbook Tables

Placing Drop Wire Spans

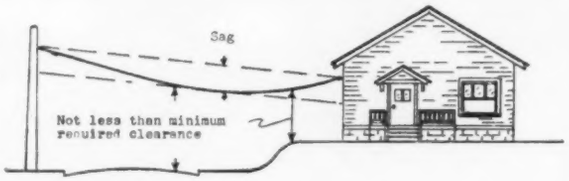


Fig. 1—Method of giving proper amount of sag to drop wire span. (Measure off desired sag on side of house and on pole and sight from one mark to the other as shown.)

THE PROPER placing of drop wire spans has an important bearing on the life of telephone drop wire. The spans should have sufficient sag for minimum strain on the drop wire attachments to the pole and the building. At the same time they should have the proper clearance from the ground. Furthermore, there should be a limit on the number of wires that are attached to a single point of support.

Table No. 1 indicates the minimum recommended sags for various drop span lengths encountered in practice. Figure No. 1 shows how the proper sag may be determined.

The maximum number of drop wire spans that may be deadended on a single point of attachment in various situations is given in Figure No. 2. For intermediate points in pole-to-pole drop wire runs, the maximum number of spans that may be supported at a single point of attachment is indicated in Table No. 2.

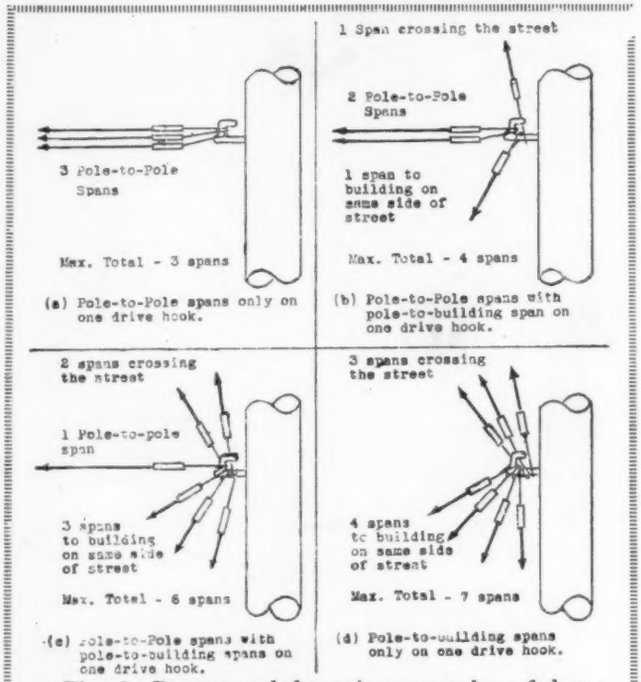

3 Pole-to-Pole Spans
Max. Total - 3 spans
(a) Pole-to-Pole spans only on one drive hook.
1 Span crossing the street
2 Pole-to-Pole Spans
1 span to building on same side of street
Max. Total - 4 spans
(b) Pole-to-Pole spans with pole-to-building span on one drive hook.
2 spans crossing the street
1 Pole-to-pole span
3 spans to building on same side of street
Max. Total - 6 spans
(c) Pole-to-Pole spans with pole-to-building spans on one drive hook.
3 spans crossing the street
4 spans to building on same side of street
Max. Total - 7 spans
(d) Pole-to-building spans only on one drive hook.

Fig. 2—Recommended maximum number of drops deadended on a single point of support. Notes: (1) Any combination up to the maximum total may be placed, if the direction of the drops permit that many to be placed on one drive hook; (2) the maximum number of drops that may be placed on one guardarm hook is five. Keep load on guardarm balanced as much as possible; (3) only one drop can be placed on a double-groove glass insulator in crossarm leads.

Table No. 1 — Minimum Recommended Sags for Drop Wire Spans

Span Length in Feet	Medium and Light Loading District		Heavy Loading District	
	Pole-to-Bldg. Spans	Pole-to-Pole Spans	Pole-to-Bldg. Spans	Pole-to-Pole Spans
50 or less	6″		6″	....
50 to 75	12″		12″	....
75 to 100	24″	18″	24″	18″
100 to 125	36″	30″	48″	36″
125 to 150	48″	42″	72″	48″
over 150 ft.*	....			

*Greatest possible sag consistent with clearance requirements. Not recommended for pole-to-pole spans.

Table No. 2—Maximum Number of Drop Spans Supported on One Drive Hook at Intermediate Points in Pole-to-Pole Runs

	Maximum Number on One Drive Hook
On drop clips in straight pole-to-pole runs	4
On drop clips at corner pole (only at small corners where pull is away from the pole)	3
On drop clamps at corner pole (large corners)	2

Named Traffic Superintendent For Michigan Gary Group Companies

Announcement has been made by B. C. Schweitzer, president and general manager of the Gary Group operating telephone companies in Michigan, of the appointment of Gordon Saunders, of Owosso, Michigan, as traffic superintendent for both Union Telephone Company, Owosso, and Tri-County Telephone Company, South Haven.

Gordon Saunders has been appointed traffic superintendent for Union Tel. Co., Owosso, Mich., and Tri-County Tel. Co., South Haven, Mich.

◆

Approves Discontinuance Of One-Subscriber Exchange

Members of the California Public Utilities Commission have agreed with the Pacific Telephone & Telegraph Co. there is no justification in continuing a part-time exchange at Drytown, in Amador County, Calif., which now serves one subscriber.

The exchange was opened in 1898 and eventually covered 16 square miles of cattle country with a peak of 17 subscribers in 1931. But for years human population has declined and only the number of cows has increased.

The commissioners, noting that cows don't talk and won't need telephone service, agreed that the one subscriber could be given service through the Plymouth exchange, three miles away.

A NEW, IMPROVED— UNIQUE SPLICERS FURNACE

Melts 50 Lbs. of Solder in 10 Minutes

Basically the same fine furnace used by larger Utilities for 20 years - Now with

- **FINE FLAME CONTROL**—keeps solder at "just the right temperature."
- **"QUICK CHANGE" GENERATOR**—removed and replaced in 60 seconds.
- **WIND-PROOF**—housing shields generator—No extra shield is needed.

Additional Features: Long-life figure "8" generator—with orifice scraper. Rugged semi-steel top plate. Powerful pump. 18 gauge welded steel tank with bottom shock ring. Size 8" x 13". Weight—15 lbs. Popular size for 6", 7", and 8" pots.

No. 55-I—KEROSENE No. 53-I—GASOLINE

If clear white gasoline is hard to get, order the Kerosene Furnace. You'll like it.

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UNIQUE MANUFACTURING CO., INC.
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4 exchanges, 1320 stations

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326 W. MADISON ST., CHICAGO 6, ILL.
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FROM THE COMPLETE LINE OF OLIVER POLE LINE MATERIALS

OLIVER TELEPHONE LINE PINS

The Oliver pins illustrated are made for use with standard insulators having 1-inch diameter pin hole. They are forged from high carbon open hearth steel, and hot dip galvanized. Wood cobs are of air-dried oak, boiled in paraffine.

Makers of Pole Line Materials Since 1894

OLIVER IRON AND STEEL CORPORATION
South Tenth and Muriel Sts. · Pittsburgh 3, Pa.

Stromberg-Carlson's XY Telephone System

(*Continued from page* 39)

On the rear of this bay are mounted the 100 line circuits. There is also capacity on the back of the bay for a total of three reverting call circuits, used to complete calls between two parties on the same line, one busy verification selector, and one common timing and alarm circuit.

Because all of the foregoing equipment, with the single exception of the dual allotter is jack mounted, it is very easy to cater to traffic changes and to exchange growth or reduction. The traffic of an original installation, for instance, may be such as to justify, only 14 links per 100 lines, in which event only the first 14 line-finders (and of course their respective first selectors) need be equipped—the unequipped positions being covered with simple blanks. Sudden changes in traffic may require the addition or removal of several of these links to continue economical or satisfactory operation. This is accomplished by simply jacking in or out the required number of line-finder-selector combinations. In the same manner, a partially equipped bay (from a line standpoint) may be added to at any time by merely jacking in new line-relay strips made in units of 10 lines each.

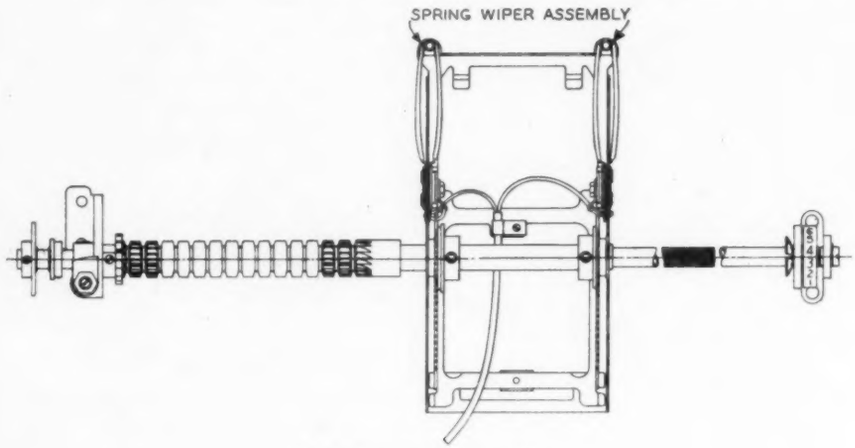
The intermediate, or selector, bays are of two basic types, single-sided and double-sided. The single-sided bay uses the same framework as the originating bay, whereas the double-sided bay, using a similar iron framework, is arranged to mount units on both front and rear. XY switches together with their respective circuit plates can be mounted on both front and rear of these bays since there is no individual line equipment to be mounted as in the case of the originating bays.

Terminating bays are similar to intermediate bays in that they also are made up in two types, single-sided and double-sided.

Circuit Features

THE LINE circuits are jack-mounted in strips of ten and may be of the 2- or 3- relay types, the latter providing lockout service. Both types are mounted on interchangeable mounting plates which permit the percentage of lockout-type lines in an originating bay to be changed at will from 10 per cent to 100 per cent in multiples of 10 per cent. This is an especially valuable feature in small community dial offices where the number of rural lines (normally provided with lockout service) may decrease or increase depending on the growth of the town.

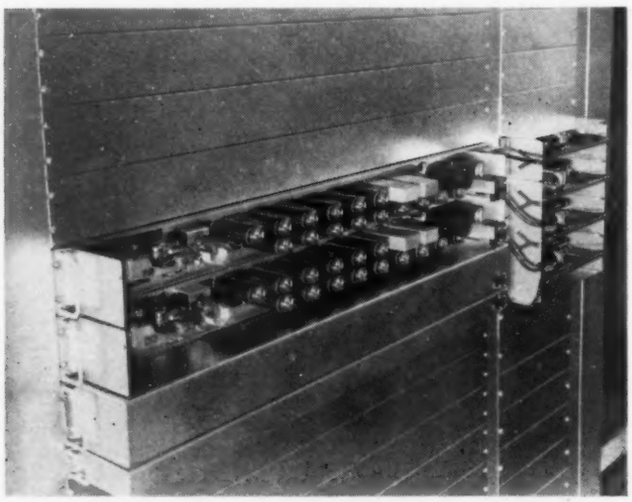
The dual allotter normally has ten line-finders associated with each of its two units. If trouble occurs in either unit then all twenty line-finders can be transferred to the remaining unit. When the maintenance man wishes to work on this troublesome unit, or for routine checking, he need only flip a double-throw key to the proper position and thereby busy-out that unit and place the twenty line-finders on the other unit.



Tubular shaft assembly.

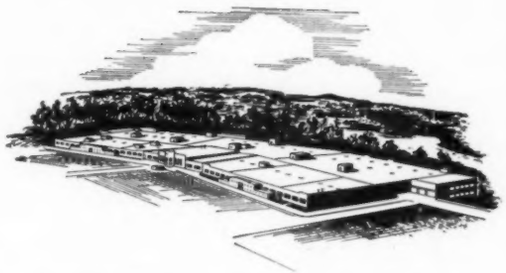
The reverting call circuit is designed to allow two subscribers on the same line to call one another by dialing a special number consisting of a preliminary digit followed by the last digit of the calling subscriber's number and the last digit of the called subscriber's number. The calling party then hangs up and both subscribers' bells ring. When the call is answered the bells cease ringing and the calling party is thereby informed.

Connectors may be of various types depending on the kinds of service which they are to perform. These services are party-line ringing of either the harmonic or code types, PBX trunk hunting, conversation timing from one or both ends, and reverting call by directory number. This method of reverting call is different from the above, in that the calling party dials the called party's number. Upon receiving busy tone,

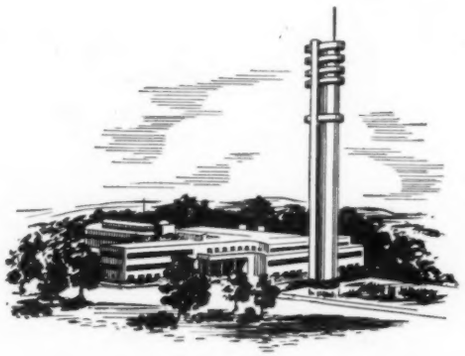


Relay mounting strips.

WANTED: MEN WHO CAN FILL THESE JOBS!



FEDERAL'S NEW PLANT, at Clifton, N. J., is the last word in modern design, modern equipment, and modern methods for precision manufacture of tele-communication and electronic equipment. Remember, too, that Federal is an associate of the International Telephone and Telegraph Corporation—one of the oldest and most securely-founded organizations in the industry. A job with Federal is a job with an assured future!



THE FEDERAL TELECOMMUNICATION LABORATORIES, at Nutley, N. J. represent the most modern laboratory and research facilities available anywhere. This, the American unit of IT&T's world-wide research and engineering organization, also represents the most advanced thinking in the field—pioneering that will shape the future of the radio and electronic industries. An affiliation with this organization offers great opportunities for the *right men!*

Federal now has openings for a few top-grade engineers who seek an unusual opportunity

IF YOU ARE an electronic or communication engineer with a really outstanding background — both academic and practical — this may be just the opportunity you've been looking for.

Federal now has a limited number of excellent jobs available for engineers with superior ability—men who want permanent positions with a company known the world over for its far-sighted research and development work in all fields of tele-communications and electronics.

Development engineers with 3 to 15 years experience in high-power and low-power transmitter design; engineers with 3 to 15 years experience in instrument landing of aircraft, mobile transmitters and receivers or wire transmission; telephone engineers with 3 to 15 years experience in circuits and equipment.

If you can meet these qualifications and want a job with an assured future, send complete resume giving educational background, job experience, age and salary requirements, to Federal Telephone and Radio Corporation, Clifton, New Jersey, attention of J. A. Abbott, Personnel Manager. All information will be kept in strict confidence.

Federal Telephone and Radio Corporation

In Canada: — Federal Electric Manufacturing Company, Ltd., Montreal.
Export Distributors: — International Standard Electric Corp. 67 Broad St., N. Y.

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rely on *Runzel*

- Yes, Runzel operator's breastplate cords really "ring the bell". For, in addition to Runzel's traditional painstaking craftsmanship, new materials and new methods have been incorporated to make fine products better.

Over the years, users have learned they can ***rely on Runzel*** for operator, receiver, switchboard, desk stand and hand set cords.

It's simple to order Runzel cords—by Runzel code, original manufacturer's code, or by sample cord.

RUNZEL
CORD AND WIRE CO.
4727 WEST MONTROSE AVE.
CHICAGO, ILLINOIS

he hangs up his receiver. After an interval which he assumes is sufficient for the called party to have answered, he again removes his receiver and conversation commences provided the called party has answered.

The busy verification switch train allows an operator or Wire Chief to verify the busy or idle condition of a particular subscriber's line.

The features of the XY switch and system that make it readily adaptable to dial telephone exchanges of all sizes and possible growths are (1) the universal nature of the switch, (2) its compactness, being smaller than any other switch, (3) its bare wire multiple which yields economies in wiring, (4) its package type units which readily allow for exchange growth and standardization, and (5) its plug and jack mounted units which give flexibility and provide for fluctuations in traffic conditions. —THE END.

◆

Pennsylvania Tel. Corp. Wins Award On Reports

For the second consecutive year, Pennsylvania Telephone Corp., Erie, has been awarded the "highest merit award" for meritorious reporting in its 1946 annual report, by the Financial World, a weekly publication circulating to business concerns and executives. The 1946 telephone report is now to be considered as a candidate for the "Oscar of Industry."

In 1946 the annual report of Pennsylvania Telephone Corporation received the certificate of "Third Best of the Communications Industry." All of these reports were prepared by Carl H. McKenzie, secretary-treasurer of the Pennsylvania Telephone Corporation.

It was announced also that Ohio Associated Telephone Co., of which McKenzie is also secretary-treasurer, was awarded the "Highest Merit Award" for its 1946 report.

◆

New Hammer With Aluminum Alloy Tips

An important new improvement has been made in the KANT-MAR hammer, one of a line of Schmidgall Products.

Tips of the Kant-Mar are made of a precision turned special aluminum alloy called "Velv-Alum," easily replaceable after hard wear. The manufacturer states Velv-Alum is a new material sufficiently tough to take punishment, yet is soft enough so as not to mar the most delicate surfaces encountered in the tool room. Velv-Alum also reduces the chance of eye injury due to chipping, and the Kant-Mar is perfectly balanced to practically end rebound accidents.

The handle is of selected grade hickory. Head has an oval hole (not round), for handle, eliminates loose handles and the consequent danger of injury. The Kant-Mar is made in two sizes, for light and heavy duty: 8 and 32 oz., in a plain model (non-replaceable tips), and in the same sizes in a model with replaceable tips. Additional 8 and 32 oz. tips may be obtained separately. Full details and prices may be had by writing New Products Editor, TELEPHONE ENGINEER Publications.

Coming Conventions

Michigan Independent Telephone Association, Olds Hotel, Lansing, September 17 and 18.

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 22 and 23.

Maine Telephone Association, Falmouth Hotel, Portland, Sept. 24 and 25.

South Dakota Telephone Association, Hotel Cataract, Sioux Falls, Oct. 1 and 2.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 14, 15 and 16.

North Carolina Independent Telephone Association, Pine Needles Hotel, Southern Pines, October 27 and 28.

Virginia Independent Telephone Association, Hotel Roanoke, Roanoke, October 30 and 31.

Florida Telephone Association, (no hotel selected), November 3 and 4.

South Carolina Telephone Association, Jefferson Hotel, Columbia, November 6 and 7.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, November 10 and 11.

Alabama Independent Telephone Association, Jefferson-Davis Hotel, Montgomery, November 13 and 14.

Missouri Telephone Association, Governor Hotel, Jefferson City, November 17 and 18.

Associated Research Develops New Precision Ohmmeter

Associated Research Inc., has recently announced the Model 246 Ohmmeter. This instrument was designed to fill a specific need in precision ohmmeter. It contains a long lasting ample power supply, is a sturdy instrument, ruggedly built, easy to handle and insures extraordinary accuracy.

The qualities of this instrument are obtained through the use of: precision wire wound resistors, individual calibration, unusually long (4½ inch) hand stepped scale, superior workmanship by specialists in the field of instrumentation.

A sturdy metal wrinkle finished case with cover to protect the instrument also holds the two No. 6 dry cells which provide ample power supply with long life. Overall dimensions are 7¾" x 6" x 7 13/16".

The manufacturer states the instrument is ideal for checking accurately resistors as low as one ohm and up to 100,000 ohms on four overlapping scales of 0-100 ohms, 0-1000 ohms, 0-10,000 ohms, and 0-100,000 ohms.

For more complete information write New Products Editor, TELEPHONE ENGINEER Publications.

◆

Seymour Smith Announce Two New Pruners

Seymour Smith & Son, Inc., Oakville, Conn., manufacturers of "Snap-Cut" Pruners, grass shears and hedge shears, have announced the two new pruners described below. These are the first of many improved items being developed in these lines. Deliveries are being made through wholesalers as rapidly as material is available.

The No. 240 has one-hand catch, operated entirely by the hand that holds the pruner. Drop-forged, black enameled steel handles—open end makes pinching fingers impossible. High grade cutlery steel blades are hardened and accurately ground, and securely riveted. Blades are quickly replaceable when finally worn out from long service. Features include Nickel-plated volute spring, patented lock nut, modern streamlines throughout, and the conventional "California" pattern, to which features have been added to provide increased strength and durability.

The No. 585 is an improved Rieser pattern pruning shear embodying all the advantages of the original plus reduced weight and improved hand fit. Drop-forged steel handles with non-pinching open ends. Top quality, cutlery steel blades, fully polished. Blades readily replaceable.

TELEPRENE*

Long Life

DROP AND BRIDLE WIRES

Strengthen the Weak Link In Your Outside Plant.

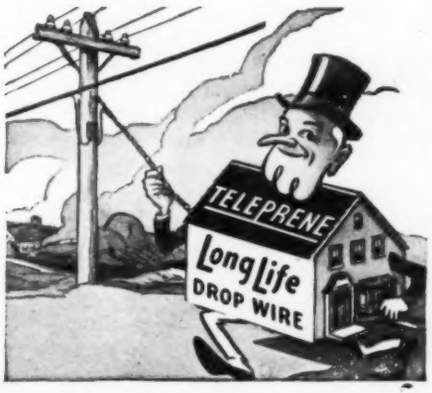
The Difference in Cost is Pennies

The Difference in Life is Years

TELEPRENE Drop and Bridle Wires have Teleplated Conductors which provide ENDURING ADHESION equal to the tensile strength of the conductor.

For Prices
Delivery
Samples
Call GraybaR

* Reg. U.S. Pat. Office



GraybaR Distributed by GraybaR ELECTRIC COMPANY

THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899

Suppliers' News Briefs

T. R. Miller Announces New Wood Preserving Line

A program of expansion which will practically double its present capacity and bring it into a new field of pressure treatment of wood products was recently announced by the creosoting department of T. R. Miller Mill Company, Brewton, Alabama, through John R. Miller, vice-president of the company.

At the same time Mr. Miller stated that Lee E. Bartlett, formerly of Chicago, has become connected with the company in the capacity of sales manager for the creosoting department and has already taken over his new duties.

Additional pressure cylinders have been ordered for use by the creosoting plant and these will give the company about twice the output that it has at present. At the same time, treatment of lumber by the new process will get under way and this will launch the company into a field of consumers which it has not been able to reach with the ordinary creosoted product.

This new treatment by which the lumber is treated under pressure with chromated zinc chloride is referred to as "salt" treament. It leaves the timber or lumber resistant to weather and hard usage and while it is acting as a preservative it also serves to make the wood somewhat fire resistant.

When treated by the new process, lumber retains its natural appearance and can be painted and finished in the same manner as ordinary lumber. In addition, the new treatment has another advantage over creosote in that it leaves no odor and will not stain clothing which comes in contact with it.

With these added advantages, many new uses are being found for the treated material and Mr. Bartlett is already making surveys of various fields in which it can be used to advantage.

Mr. Bartlett has been in the lumber and lumber treating business for over 20 years and for the past five years has been connected with the American Lumber & Treating Company in the capacity of specialist in agricultural engineering. He is an active member of the American Society of Agricultural Engineers and of the Committee on Farm Structures of the Producers' Council.

Lee R. Bartlett (left), new sales manager of T. R. Miller Mill Co., Brewton, Ala., and R. B. Hawk, also of T. R. Miller Mill Co.

◆

Philco Storage Battery Div'n. Sold to Gould Company

Acquisition of the entire business and plant facilities of the Storage Battery Division of Philco Corporation and their consolidation with the Gould Storage Battery Corporation, a subsidiary of National Battery Corporation, to form one of the largest industrial and automobile replacement storage battery companies in the United States, was recently announced by A. H. Daggett, President of Gould and National Battery.

"The rapid growth of the industrial storage battery business in recent years and the opportunities for further expansion that we see ahead will be greatly increased by the consolidation of the Philco Storage Battery Division with the Gould Storage Battery Corporation, both important manufacturers of industrial batteries," Mr. Daggett said in announcing the transaction and his plans for the future. M. W. Heinritz, vice-president in charge of the Storage Battery Division of Philco, has been appointed Vice-President in charge of the Trenton Division of the Gould Storage Battery Corporation.

"With the acquisition of the Trenton, N. J., storage battery plant of Philco, Gould and National Battery now have manufacturing plants located at all strategic points throughout the United States," Mr. Daggett pointed out. "National Battery is already one of the largest producers of automobile replacement batteries and as a result of this consolidation will become a leader also in the industrial battery field, which supplies the railroad, mining, public utility, and heavy industry fields, as well as the United States Government. Sales engineering and service facilities of the combined Gould and Philco divisions will cover the entire country more thoroughly than ever before.

"Of special importance, National Battery has an outstanding research laboratory devoted to engineering and development work on new types of batteries, which makes it possible for the Company to pioneer in new technological developments.

"A combination of this kind by consolidating the best features of both companies will provide our customers with the best products and service obtainable."

◆

Lester R. Crane Joins A. B. Chance Company

Lester R. Crane has been appointed Chicago district manager for the A. B. Chance Company, Centralia, Mo. Mr. Crane formerly was associated with Westinghouse Electric Corporation in Pittsburgh as an application sales engineer for switchgear used

Lester R. Crane

in power centers and unit sub-stations. His territory includes the states of Illinois, Indiana, Ohio, Kentucky, and Michigan.

Mr. Crane succeeds Charles L. Clark, who retired recently after 27 years of service with the A. B. Chance Company.

Leroy C. Hansen, formerly a transformer specialist with General Electric Company, Chicago office, has

LeRoy C. Hansen

joined the A. B. Chance Company, Centralia Mo., as a sales engineer. Mr. Hansen, who has had considerable experience in utility and R. E. A. central station engineering work, will maintain headquarters in Centralia.

◆

H. H. Stanley Retires; With Kellogg 23 Years

Harvey H. Stanley, chief installer for the Kellogg Switchboard & Supply Company, Chicago, retired from active duty with the company June 27. Mr. Stanley joined the Kellogg company in 1924 as an installer of switchboards and spent the following four years traveling in this capacity.

In 1923 he was promoted to chief installer. Among his outstanding installations was that of the Kinloch Telephone Company, St. Louis, Mo., completed in 1924. Recent switchboard installations Mr. Stanley directed include those at Maryville, Va., Hoopeston, Ill., and Atmore, Ala. In addition, he recently directed switchboard rehabilitation jobs at Goshen and Connersville, Ind., Ft. Myers, Fla., and Front Royal, Va.

Succeeding Mr. Stanley at his former post as chief installer is R. M. Schofield, the former's assistant for the last five years. Kellogg's new chief installer of switchboards began with the company in 1939. Installation jobs he has recently supervised include those at Port Byron, N. Y., and Marion, Va.

• • •

Communications Group Will Inspect Modern Installations in Colombia

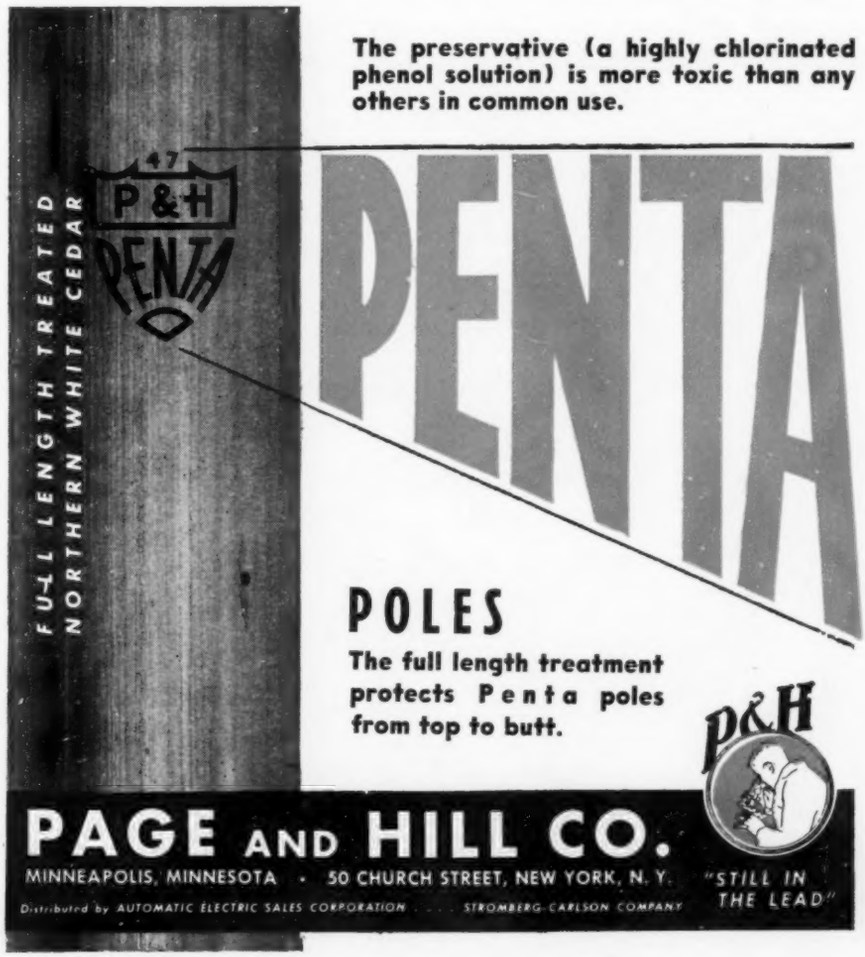
A commission of American communication engineers left for Colombia in July at the invitation of Dr. J. V. Davila Tello, Colombian Minister of Posts & Telegraphs, to inspect the main trunk telephone and telegraph line now under construction between Barranquilla and Bogota. The group is headed by H. H. Wheeler, Western Union lines engineer.

The Barranquilla-Bogota line, covering a distance of more than 1,000 miles, is being constructed for the Colombian government by the Compania Constructora Transandina, Ltda., general manager of which is Rogers Case, inventor of the Case span transposition bracket.

The line will provide simultaneous telephone and telegraph transmission. In its construction the most modern methods, including carrier circuits and the Case bracket, are being used.

Accompanying Mr. Wheeler were William F. Markley, assistant lines engineer of Western Union; F. H. Menagh, superintendent of communications, Erie Railroad; J. W. Cook, lines construction engineer, Santa Fe Railway, and Mr. Case.

Mr. Case has worked for many years in Latin American communications, and his transposition bracket has been hailed by technicians as an important contribution to carrier com-


The preservative (a highly chlorinated phenol solution) is more toxic than any others in common use.
FULL LENGTH TREATED NORTHERN WHITE CEDAR
47
P&H
PENTA
PENTA
POLES
The full length treatment protects Penta poles from top to butt.
P&H
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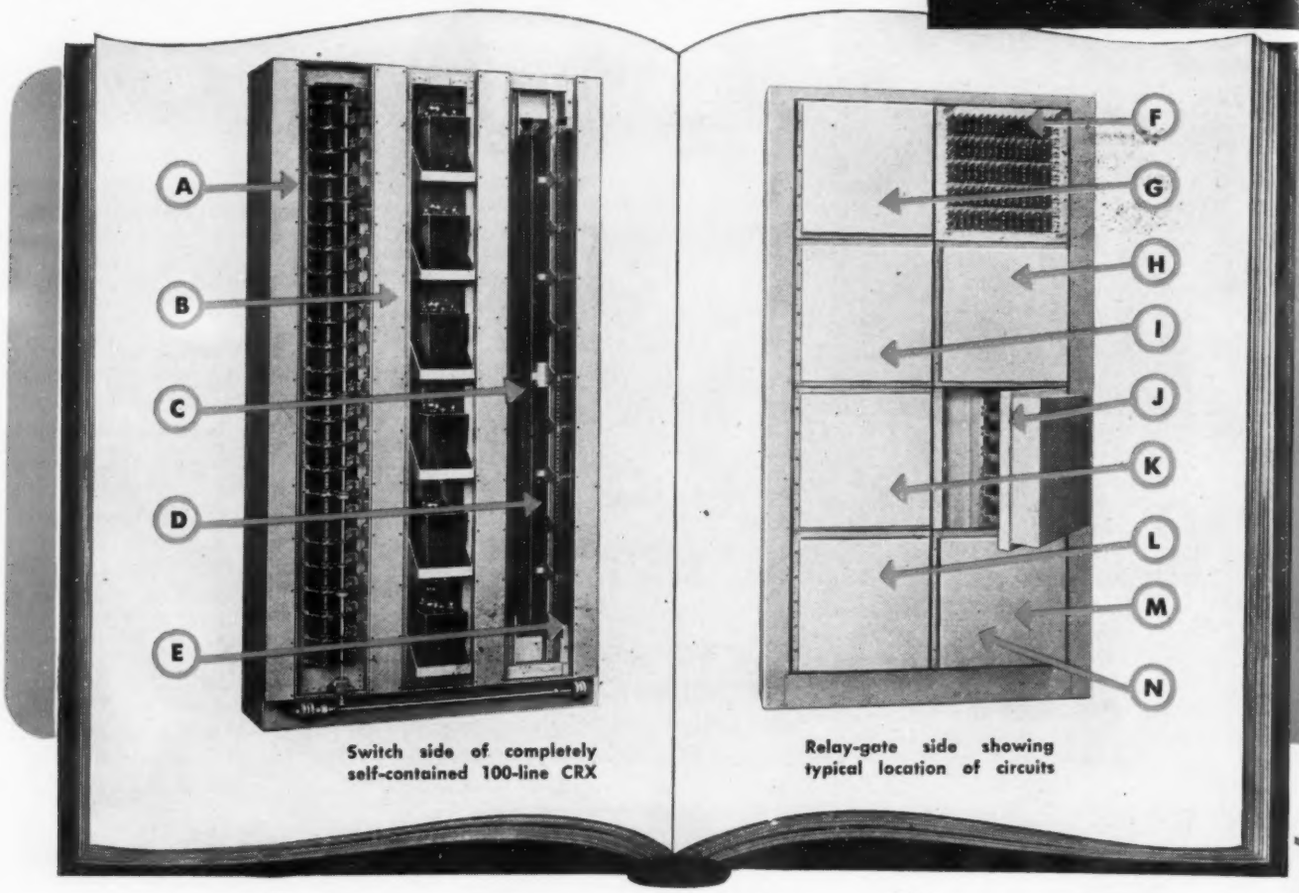
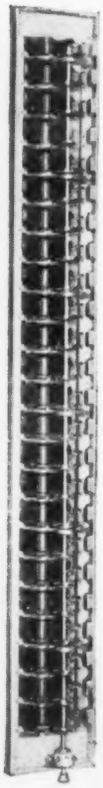
MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.
"STILL IN THE LEAD"
Distributed by AUTOMATIC ELECTRIC SALES CORPORATION
STROMBERG-CARLSON COMPANY

HERE'S HOW FEDERAL'S CRX



Switch side of completely self-contained 100-line CRX

Relay-gate side showing typical location of circuits



Switch frame

100-point rotary switch

(A) SWITCH FRAME

Provides compact vertical mounting for twenty-four 100-point rotary switches. One or more switch frames can be mounted in a master frame, depending upon the per cent trunking required. These switches perform the following functions:

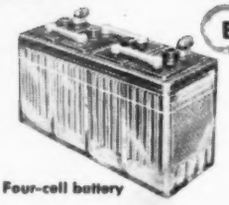
Register Link Line Finder
Connects calling line to register circuit

Local Link Line Finder
Connects calling line to idle local link

Toll Link Line Finder
Connects calling line to toll link

Local Final Selector
Connects calling line to called party's line

Toll Final Selector
Connects calling line to toll line, or incoming toll line to called party's line.



Four-cell battery

(B) BATTERY FRAME

Provides integral mounting of six 8-volt batteries. These new, low-cost, four-cell, 50-ampere-hour batteries permit unusual economy of space and simplicity of connections.

(C) MAIN DISTRIBUTING FRAME

The "A" Type frame shown above provides convenient and accessible mounting for:

(D) Up to 200 Protectors
and
(E) Up to 400 Line Terminals

One or more distributing frames, either "A" Type or "B" Type, can be mounted in a master frame, depending on number of terminations required.

Federal Te

KEEPING FEDERAL YEARS AHEAD... is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit

MAKES REAL SAVINGS POSSIBLE!

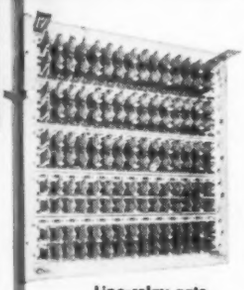
THESE INTERCHANGEABLE, FACTORY-WIRED COMPONENTS CUT COSTS OF:

1. Initial Equipment
2. Installation
3. Maintenance
4. Extension

FEDERAL'S NEW Community Rotary Exchange offers you, for the first time, a simplified equipment composed of basic interchangeable units This means that a complete exchange—from 40 to 400 lines—can be "custom tailored" to your specifications The use of standard, pre-wired components, however, permits manufacture by mass production methods at *minimum cost!*

The equipment is shipped completely assembled and wired, ready to install and connect to power supply and cable distribution system. Maintenance expense is greatly reduced, because of the inherent trouble-free operation of the simple rotary equipment—and because all parts are readily *accessible and interchangeable.*

With CRX, there's no need to burden your initial installation with costly excess wiring and cable forms to provide for future growth! As traffic requirements increase, you can extend facilities simply by adding factory-wired units to your existing master frame — or by installing additional master frames — without change in the original equipment.



Line-relay gate with cover removed

RELAY GATES

Hinged relay gates, with common dust covers, contain all relay and auxiliary circuits. Each gate can accommodate up to five interchangeable relay mounting plates. These plates are factory assembled and completely wired—easily installed by local service men for extension of facilities. Location of the following circuit components is optional, as all relay gates and mounting plates are interchangeable.

(F) Line Circuit
(H)

Two relays per circuit (or 3 relays, if line lockout is desired). 15 or 10 circuits per mounting plate.

(G) Register Link Circuit

Consists of required relays and two marker switches. One circuit per mounting plate.

(I) Local Link Circuit

Consists of required relays. Two circuits per mounting plate.

(J) Register Circuit

Consists of required relays and three marker switches per circuit. One circuit per mounting plate.

(K) Toll Link Circuit

Consists of required relays. Two circuits per mounting plate.

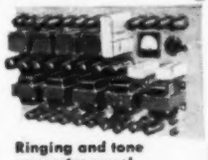
(L) Toll Circuit

Consists of required relays and one marker switch per circuit. One circuit per mounting plate.

(L) Miscellaneous Circuits

Consists of required relays for finder start, motor start, supervisory signals and distant office alarm. All circuits on one mounting plate.

(M) Electronic Ringing & Tone Generator



Ringing and tone generator panel

Provides 5 ringing frequencies, at 10 watts each—also, busy and dial tones. Occupies space of 3 mounting plates.

(N) Full-float Power Supply

Power-supply panel

Constant-voltage, full-float Selenium Rectifier—6 ampere capacity. Occupies space of 2 mounting plates.

THIS IS THE FOURTH *of a series of announcements on the revolutionary new CRX*

Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: — Federal Electric Manufacturing Company, Ltd., Montreal.
Export Distributors: — International Standard Electric Corp., 67 Broad St., N. Y. C.

munication line construction. The line which he is building between Bogota and Barranquilla traverses a rugged terrain. Many problems had to be solved in this construction, among which were adverse climatic conditions, strong winds, severe lightning storms and changing temperatures, over a terrain which varied from snow-covered mountains of the Andes to the torrid coastal plain.

◆

Stromberg-Carlson Opens Atlanta Office

Arthur F. Gibson, Stromberg-Carlson assistant general sales manager, has announced that the company has opened an Atlanta, Georgia, telephone sales office in the Connally Building at Whitehall & Alabama Streets. Furniture and other office equipment have been moved in and the office is in full operation.

William L. Mollands, former Stromberg-Carlson sales representative in the southeast, has been appointed manager.

◆

Stromberg XY System For Worthington, Pa.

The first Stromberg-Carlson XY dial telephone system, a type of dialing equipment with marked economies in operation, recently left the Stromberg's Rochester plant for Worthington, Pa.

The XY system derives its name from the fact that the Stromberg-Carlson XY switch, a device which operates in two directions at right angles to each other, is really the heart of the new type dialing equipment. The XY switch is readily adaptable to dial type telephone systems of all sizes and possible growths. Its flexibility and versatility are expected to increase efficiency of such systems, and at the same time effect considerable economies in maintenance and upkeep costs, according to company officials.

Because the XY switch may be used interchangeably as a line finder, selector, or connector, rotation of the switches in different capacities prolongs the life of the switch. Maintenance is kept at a minimum.

The arrangement of the system eliminates thousands of the soldered connections in a conventional switchboard.

Chas. L. Pierce, Jr., (left) and Joseph V. Smith, were recently elected chairman of the board and president, respectively of Hubbard & Co., Pittsburgh, Pennsylvania.

◆

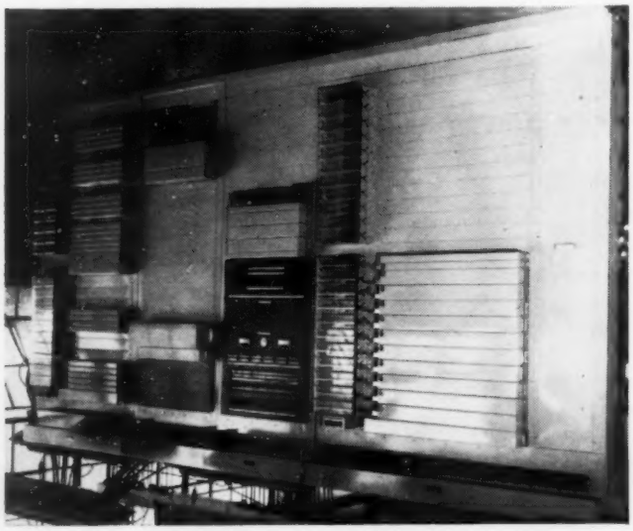
New Cook "Testerm" Drop Wire Connector

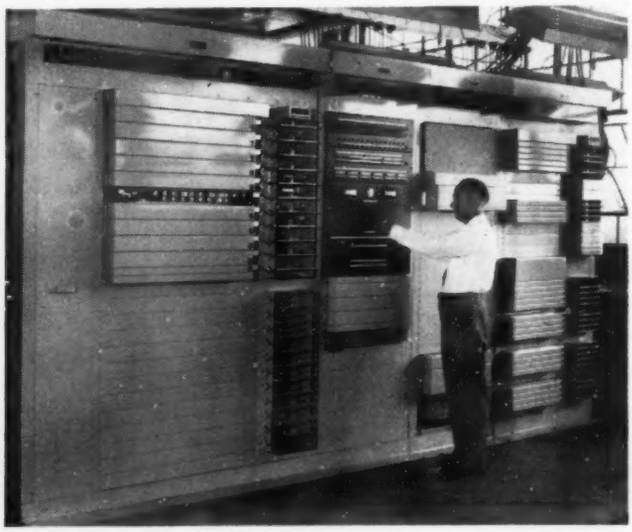
In order to improve the method of connecting subscriber drops to open wire and reduce the cost of installation and maintenance, Cook Electric Company has developed the new Cook "Testerm" Drop Wire Connector.

This economical connector is mounted on the cross arm and provides a dry spot connection for termination of drop wires. This preserves drop wire insulation, which is becoming an increasingly important factor.

Tie wires are attached to the open line wires with a split sleeve and are terminated on two 12-24 studs that are set in a glazed low moisture absorption porcelain block. Drop wires are attached to the same studs. This permits testing without opening a taped connector. The one-piece drawn metal hood is hot galvanized. The terminal is weather-proof and all metal parts are rust-proofed.

The new "Testerm" Drop Wire Connector reduces the annoyance of high resistance connections, facilitates test-





Stromberg-Carlson's first XY dial telephone system (left) will be installed in Worthington, Pa. Dr. Harry Reed, Stromberg-Carlson's chief telephone engineer (right) examines the XY equipment.

New Cook "Testerm" drop wire connector.

ing and reduces maintenance costs. It is another "Cook" quality product of high serviceability at a very reasonable price.

◆

New Index To A.S.T.M. Standards

The American Society For Testing Materials has recently issued its "INDEX TO A.S.T.M. STANDARDS," as of December, 1946. This publication issued in June, 1947, is an adjunct to the 1946 Book of Standards and enables any of the some 1400 standard specifications and tests in the volumes to be located readily. The Index is also of service to those who wish to determine whether A.S.T.M. has issued standard specifications, test methods, or definitions covering a particular engineering material or subject.

All items are listed in the Index under appropriate key-words according to the particular subjects they cover. As a convenience a list is given of the specifications and tests in numerical sequence of their serial designations.

Copies of the 242-page publication are furnished without charge on written request to A.S.T.M. Headquarters, 1916 Race Street, Philadelphia 3, Pa.

◆

Federal Appoints Gleason Telephone Sales Manager

The appointment of I. W. Gleason as telephone sales manager of Federal Telephone & Radio Corporation, Clifton, N. J., domestic manufacturing affiliate of International Telephone &

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I. W. Gleason

Telegraph Corporation, has been announced by E. N. Wendell, vice president in charge of Federal. Mr. Gleason succeeds E. C. Stoner who has been given another assignment in the IT&T system.

Mr. Gleason rejoined IT&T last year after more than four years of war service and was assigned to the telephone commercial department of Federal. Previously he was with IT&T from 1927, when he entered the IT&T college training course, until 1933. During that time he served as outside plant engineer of the Chile Telephone Company and later as assistant to the chief engineer of IT&T South America. From 1934 until 1942 Mr. Gleason was with the New Jersey Power & Light Company as district superintendent and later as industrial sales engineer.

As a Lieutenant Colonel during the war, Mr. Gleason's last assignment was as executive officer to Brig. Gen. George I. Black, Signal Corps Chief, Army Communication Service. He entered the service in 1942 initially as a civilian engineer in charge of telephone and telegraph communications for the Army in the Trinidad Sector and Base Command. Later he was appointed chief engineer in charge of all telephone, telegraph, radio and radar communications.

◆

Albert R. Hodges Joins Stromberg-Carlson

Frederick C. Young, Stromberg-Carlson vice president in charge of engineering, has announced that Albert R. Hodges, a senior member of the Institute of Radio Engineers, has been added to the company's patent department and will handle patent prosecution and related matters in the radio and electronics field.

Mr. Hodges was formerly a member of the patent department of the Sperry Gyroscope Company, Inc., of Great Neck, N. Y., and former patent engineer of the Airborne Instruments Laboratory (Columbia University Division of War Research) at Mineola, N. Y. He has served in electrical engineering capacities for General Electric, Farnsworth Television and Radio, and Ralph H. Langley.

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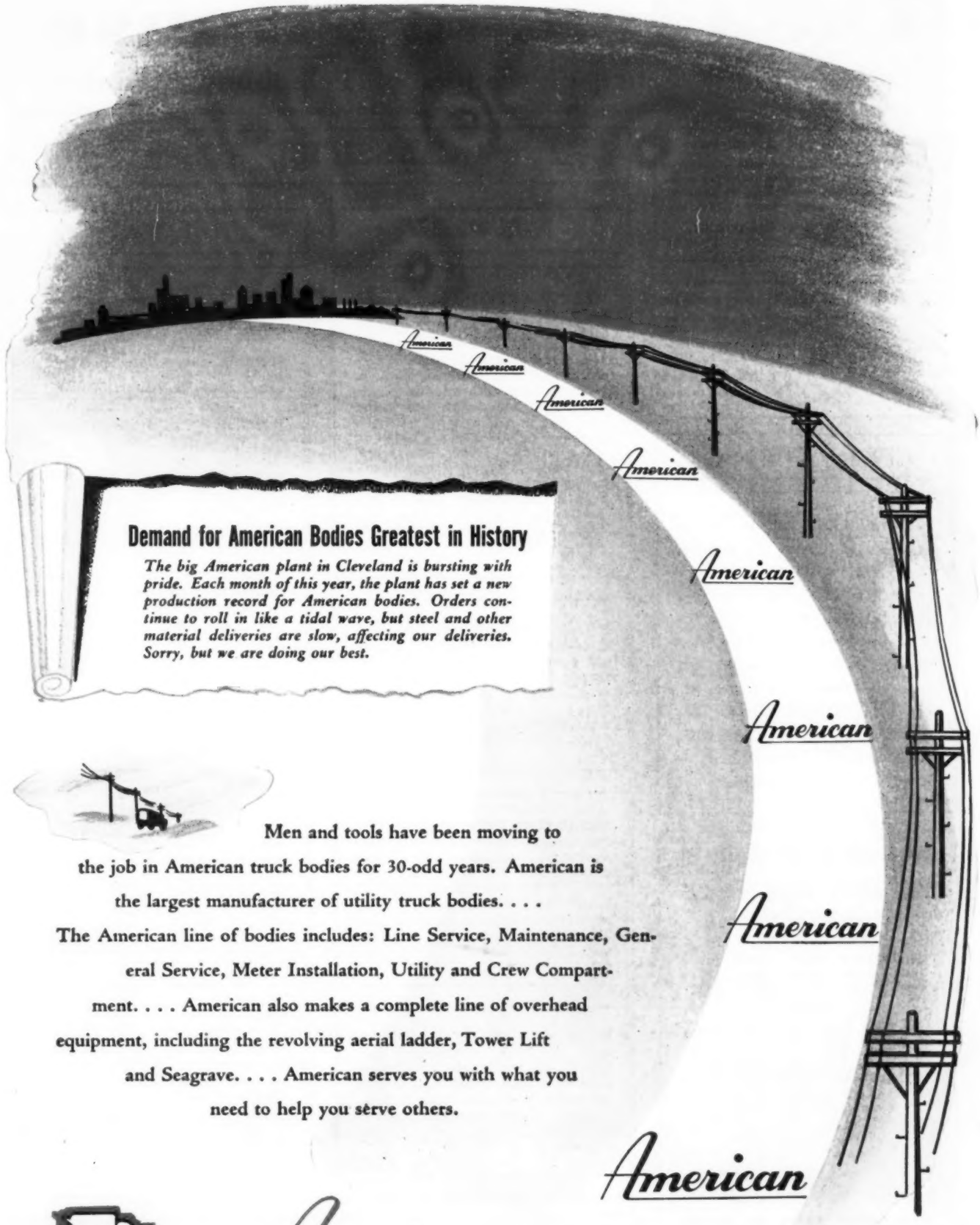

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HELP WANTED: Young man, single or married, capable of servicing a two position CB board and small automatic exchanges. Prefer man with electrical wiring and servicing experience. Steady work, chance for advancement. Box No. 8510.

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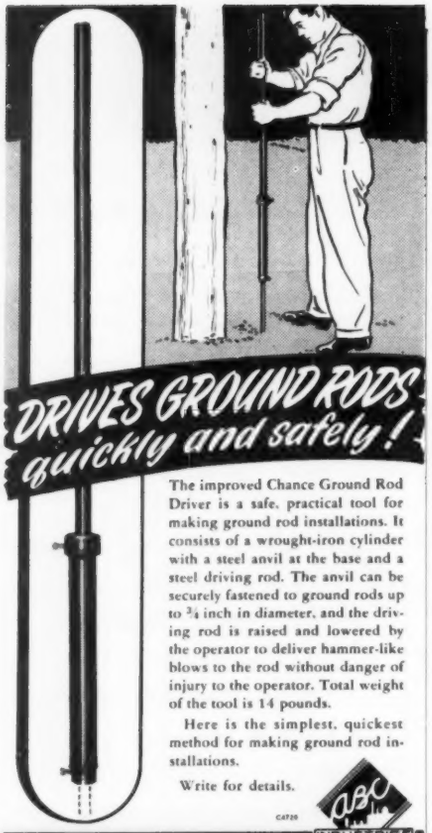

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Book Reviews

"PRINCIPLES OF ELECTRICAL ENGINEERING"—By T. F. Wall, D.Sc., D. Eng., Head of Electrical Engineering Department, University of Sheffield; 567 pages; $8.50; published by Chemical Publishing Co., 26 Court St., Dept. 27, Brooklyn, N. Y.

This book presents a comprehensive but compact account of the basic principles of electrical engineering. Emphasis is placed on the identity of the principles relating to both heavy-current and light-current engineering practice and attention is given to simplification in methods of solution of a wide range of technical problems. New developments in applications, testing and materials are fully covered.

Among the many features of the book are:

(1) Absolute units, the M.K.S. system, and the Rationalized system with commentaries on the significance of each group and, in particular, the most recent research work of the U. S. Bureau of Standards.

(2) The first comprehensive account of the International change-over of units to the absolute system.

(3) The latest work on synthetic insulation materials, particularly as regards high-frequency applications, and a table giving the characteristic data of these newer materials as well as those for materials in standard practice.

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(7) Various graphical methods for solving problems of electrical engineering. The principles of "Inversion" and of "symmetrical component analysis" are explained in full detail equipping the reader with these most powerful aids to the solutions of practical problems which would otherwise be beyond the ability of any but advanced mathematicians.

(8) The principles of the propagation through space, of electro-magnetic waves, with particular reference to the method of calculating energy relationships of the reception and transmitting antennae. The treatment, although mathematically exact, is nevertheless easily absorbed and made keenly interesting to the normal reader of average intelligence.

Whatever branch of the subject you study, sound progress can be made by consulting this carefully written, up-to-date book.

◆

"ELECTRICAL ENGINEERING—PROBLEMS AND THEIR SOLUTIONS"—by T. F. Wall, D.Sc., D. Eng., Head of Electrical Engineering Department, University of Sheffield; 312 pages; $5.00; published by Chapman Chemical Co., Inc., 26 Court St., Dept. 27, Brooklyn, N. Y.

This book is a companion volume to Dr. Wall's "Principles Of Electrical Engineering" and the examples are chosen and arranged to emphasize the different aspects of the principles dealt with in the various chapters of that book and to clarify points which might otherwise be obscure.

In detailed, step-by-step description, solutions to problems from the whole range of applied electricity and magnetism have been drawn. Both light-current and heavy-current problems have been considered with equal freedom in order to show the universality of the principles.

Questions and answers have been taken from actual practice. They form a valuable guide in the actual working out of numerical and other examples.

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"STEEL CASTINGS"—by Eric N. Simons; 216 pages; $5.00; published by Chapman Chemical Co., Inc., 26 Court St., Dept. 27, Brooklyn, N. Y.

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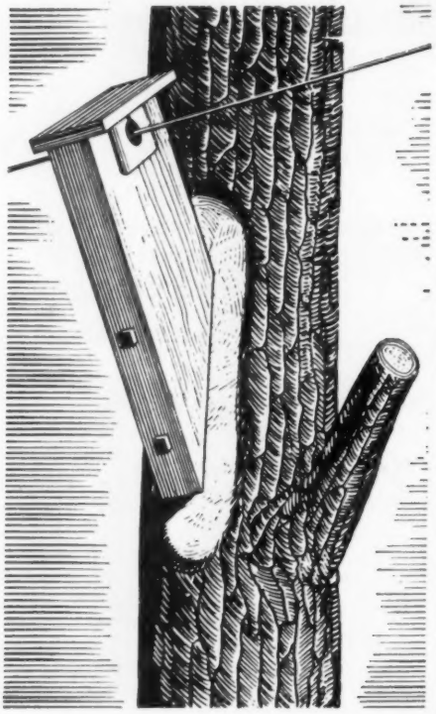

★ 1847 ★

Glass block insulator on tree

ANOTHER early type of insulator was a glass block with a double-tapered, slotted hole for the wire. Entrance to the slot was zigzagged so that the wire could not slip out. Set in a wooden block it was then fastened to the side of a tree or pole. The wooden roof served as a rain shed.

Hemingray is now manufacturing a complete line of insulators for all communication line requirements.

Write for the complete historical outline of insulator development.

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Hemingray Division, Muncie, Ind.

THE BACK OF THE BOOK

By JOHN G. REYNOLDS
Managing Editor

"OLD SOL" PUTS ON A SHOW . . .

AMONG THE problems which radio-telephone engineers have to study in order to ensure high quality overseas telephone service are disturbances in the atmosphere of the sun.

Every few years, writes H. G. Owen in the Blue Bell, Old Sol puts on a regular fireworks display. His glowing face grows redder than ever, huge flames shoot into space, and gigantic spots, thousands of miles across, appear upon his face. Like a gargantuan garden spray, he rains electricity upon the planets.

About 26 hours later, having traveled a distance of nearly 93 million miles at a speed of 1,000 miles or so per second, these electrical particles reach the ionosphere above the earth. The electronic stream causes a stormy condition in the ionosphere and the radio waves are no longer smoothly reflected but are scattered and nothing gets through to the receiver except noise.

To protect communications, telephone engineers make continual studies of solar phenomena, the ionosphere and magnetic disturbances. The battle against such an apparently remote foe as sunspots gives some idea of the problems the engineers have to overcome.

• • •

APPRECIATIVE SUBSCRIBERS . . .

IN A RECENT issue of the Phoenix (Ariz.) GAZETTE, a telephone subscriber's "Letter To The Editor" made the headlines. Hitting out at telephone rate publicity the subscriber wrote:

"I am somewhat tired of seeing so much in the paper on the subject of telephone rates. The telephone company is doing a fine job. I feel that they should receive a good word from an appreciative subscriber.

"I do not think the public, generally, realizes the tremendous amount of equipment required to serve the telephone, which takes up so little space on wall or desk.

"My reaction to the present hearing is that it is costing both the public and the telephone company considerable money, and in the end we will have to permit a rate sufficient to cover operating expenses and a reasonable profit on the investment.

"I am writing this with the hope that those who read this will make a visit to the company and ask to see the equipment in operation. They are only too glad to show you.

"Just stop and think of the expansion that has taken place here in Phoenix during and since the war. Give the telephone company a chance to bring their facilities up to present day requirements before you condemn their service.

"Incidentally both long distance calls I made today were placed in a very few minutes while I held the line.

"Let's hope that we may never come to the British system of government phone service which is, as I understand it, the world's worst."

• • •

IT'S THE BERRIES . . .

IT WAS A costly yen for strawberries that Rel Brown of London had on the West Coast.

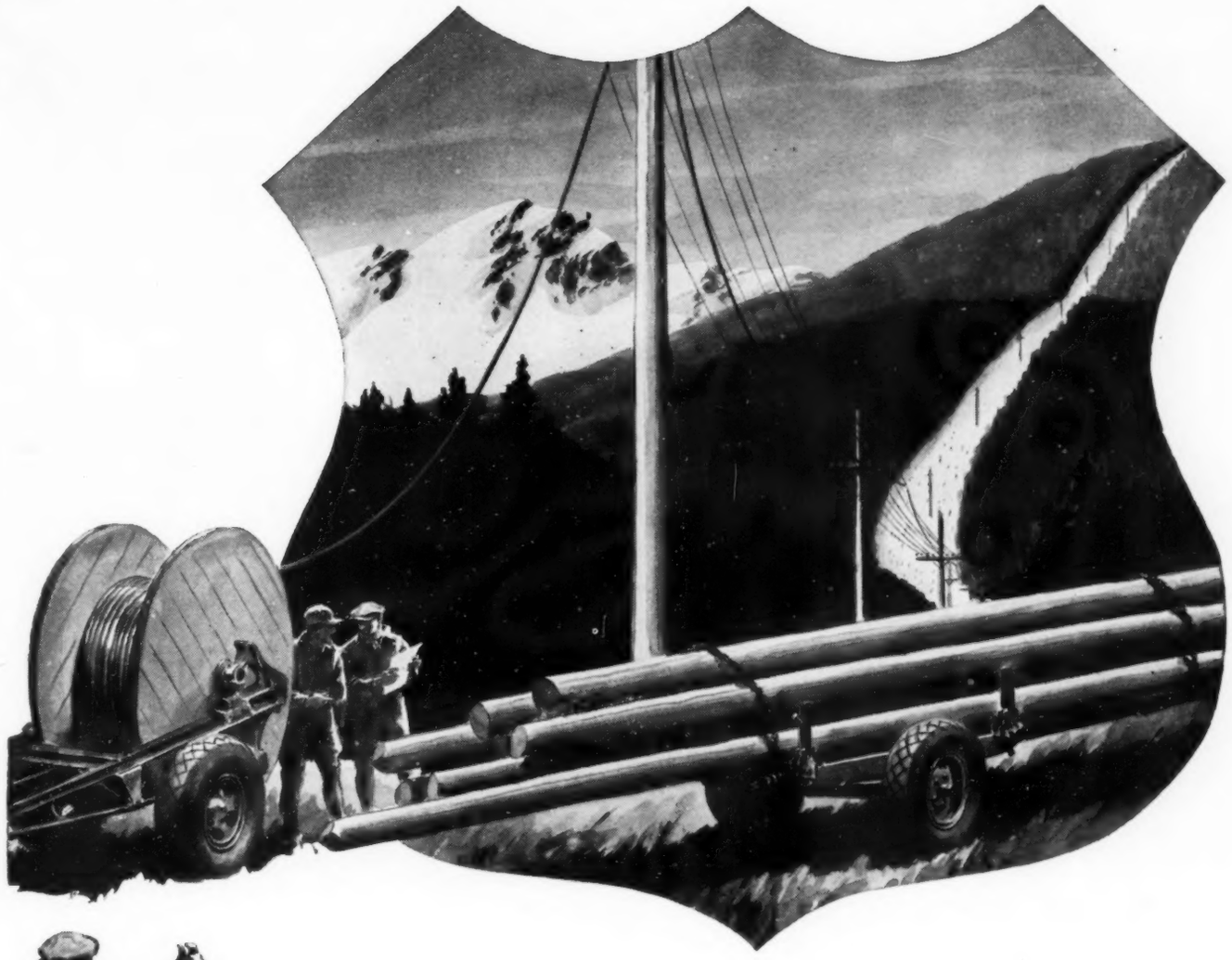
He couldn't remember whether his diet allowed him to eat them. His copy of the diet was in London. So he put in a transatlantic call to his wife. She informed him he could have the berries.

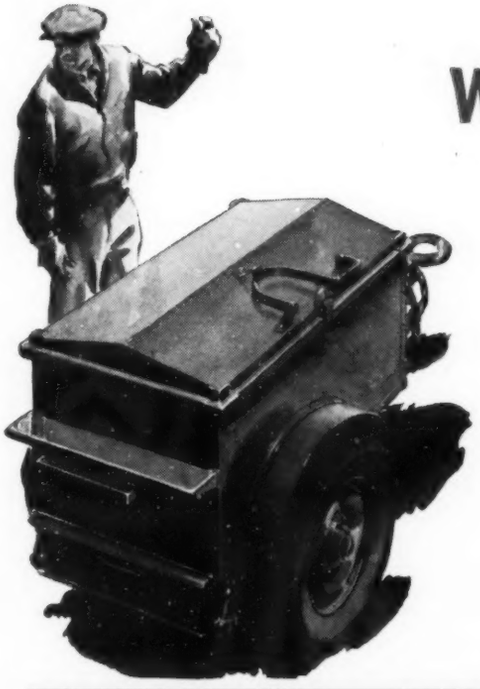
Mr. Brown breakfasted sumptuously on eggs, toast, coffee, cream and fresh strawberries. Cost, $1.29, plus $94 in phone tolls.

• • •

LOW RATES . . .

TELEPHONE service in Shanghai now costs less a month than the price of a single copy of the local newspapers. Other public utility companies, many of them owned by United States concerns, are in the same unenviable position. Telephone service with twenty-five additional calls above the contracted sixty calls costs $2,860 Chinese, while the English language papers charge $3,000 Chinese a copy.





When the line goes over a mountain HIGHWAY EQUIPMENT goes, too

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They all travel behind other vehicles that are needed on the job —the Pole Trailer, for instance, may be hauled by the light truck which carries the Highway Earth Boring Machine and Derrick. Either or both the others will ride easily behind a Highway Construction or Maintenance Truck.

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